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Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

FALL RURAL ISSUE

DECEMBER 3, 1949

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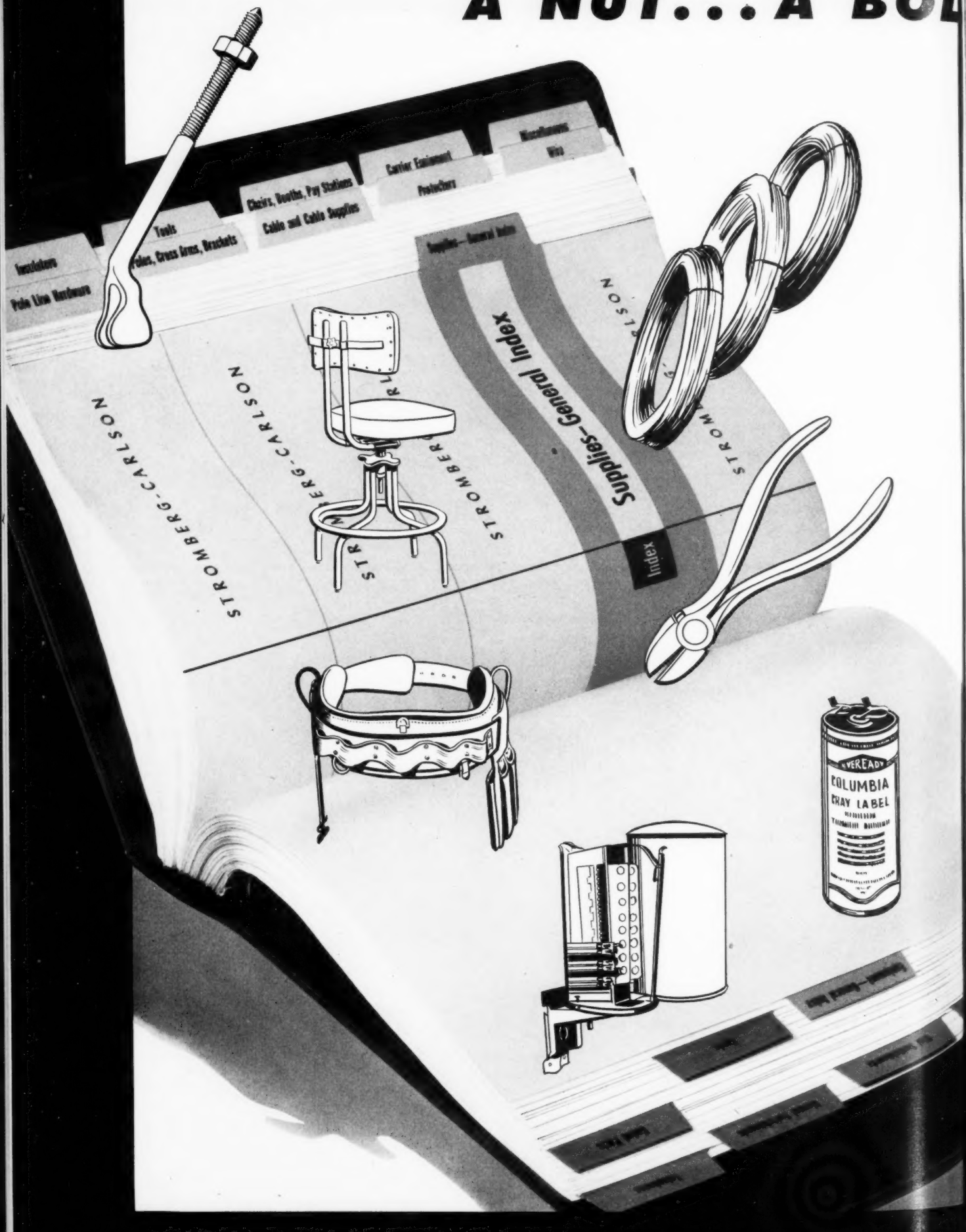

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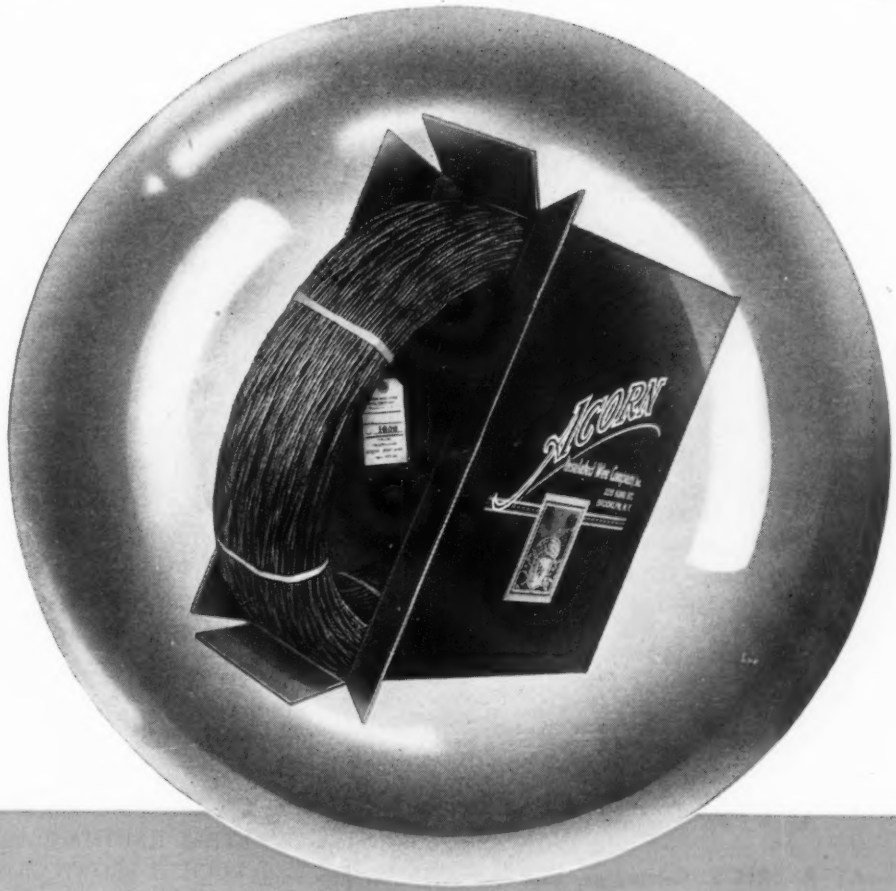

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FLASHES AND PLUGS

HIS LAST ACT WAS ODOROUS. The telephone rang at police headquarters in Dallas, Tex.

"Skunk trapped in barrel, 5800 block of Yale," said a voice. "Please exterminate. Urgent!"

Off sped two patrolmen. They arrived at the barrel and one took aim with a shotgun. He fired. The other went over to the barrel and peered under the lid.

"Well shot!" he said, seeing the skunk motionless. He turned over the barrel.

The "dead" skunk took a look, snuggled up to the horrified patrolman, then took off for the brush. The other patrolman fired again, this time successfully.

The one who had the brush with the animal called headquarters: "One dead skunk," he reported, holding his nose.

• • •

THE EXPENSIVE HAT. How would you feel if you left $8,312 cash in a telephone booth and then couldn't find it there later? That's what happened recently in Philadelphia.

Afraid to leave the money unprotected in their apartment, a woman and her husband took it with them when they went to a corner drug store to make a telephone call.

Completing the call, the woman rejoined her husband. A few blocks from the store, she remembered her handbag—and the money.

They rushed back to the telephone booth. No handbag and no money. The druggist knew nothing of it. The worried couple hurried to the nearest police station to report their lost savings.

As they were about to leave the police station in walked a young woman to report finding $8,312 in a drug store telephone booth. She said she put the money in a hatbox and took it to the couple's address, which she had found in the wife's handbag. She turned it over to the tenant of the first floor apartment.

Thinking the box contained a hat, he put it in the hall outside his neighbor's door. When the worried husband and wife arrived home, the box—and the $8,312—were still there.

• • •

HERMIT'S PERMIT—AT A PRICE. Getting permission to build a telephone line across private properties involves a world of negotiations, as any right-of-way man knows. Once, not long ago, one of them had to ask a hermit for permission to route an important long distance line across his land. But each time he tried, the hermit saw him first and lit out for the hills. Finally, neighbors remembered that the old man was most sociable when he played the violin.

Next time the hermit took off, the telephone man came tearing along, too, calling that he hoped to hear him fiddle. The hermit promptly returned, tuned up, and played his entire repertoire. It took seven hours, but for an encore he gave his blessing to the pole line.

• • •

ADDING INSULT TO INJURY. Safe-crackers stole nearly $4,000 in coins and $200 in bills from a Southwestern Bell Telephone Co. office in Dallas, Tex., recently. That was bad enough, but they also took a company truck to haul away the heavy loot.

That was rubbing it in.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

December 3, 1949

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CONSTRUCTION OF UNATTENDED

Dial Exchange Buildings

By **RAY BLAIN**
Technical Editor

TELEPHONE operating companies everywhere are presently displaying considerable interest in the construction of suitable buildings for the proper housing of unattended dial exchange equipment. In view of the fact that in many localities there are no architects and builders who are familiar with the necessary requirements for special buildings of this nature, this article is presented with a view to being helpful to telephone companies located in these areas.

It is not claimed that all of the problems that will be encountered in every locality will be answered in this discussion, but it is hoped that this general information may be found useful as a guide and that it may assist in working out at least some of the problems in the planning and construction of unattended dial exchange buildings.

Buildings for unattended dial exchanges similar to the one described in this article were originally designed in 1934 by a large telephone operating company. Continuous improvements have been made in both the design and in the materials used until it is now believed that the building described herein is far superior to the original type of building. The plans, specifications and procedures presented here are a result of experience gained in the actual construction of some 40 buildings of a similar type.

Fortunately, the cost of this type of building is not considered prohibitive. A local contractor in one locality estimates that at the present time he could construct one to house a 200-line exchange for approximately $2,200 and one for a 400-line exchange for approximately $3,000. The cost, however, would be governed by the geographical location, local material and labor costs as well as the refinements incorporated in the design. With slight modification of the plans, the building described in this article also may be designed to accommodate a 600-line exchange.

The accompanying drawings are for a 200-line exchange building and are essentially complete and self-explanatory. If these drawings and the following rather detailed specifications are furnished to the average qualified contractor, he will be able to make an accurate estimate on the building costs in your particular locality.

Specifications

The contract for construction of the building described and illustrated herein contains the following provisions,

RAY BLAIN

which can be used as a guide by companies for such construction:

"The contractor will furnish all materials, labor, equipment, etc., as required, to complete the construction work indicated on the drawings and in accordance with the specifications. All materials shall be new, of good quality and be installed in a neat, workmanlike manner by workmen skilled in the work assigned to them, and in accordance with the recommendations of the manufacturer of the materials involved. The contractor shall also obtain and pay for all necessary permits and licenses and comply with all laws, ordinances, rules and regulations pertaining to this type of building construction, as required, in a particular community.

"A plot plan showing the location of the building, walks, proposed grades, etc., will be furnished by the owner. The contractor will excavate, fill and grade, as required. The fill to the proposed grades shall be made with material approved by the owner.

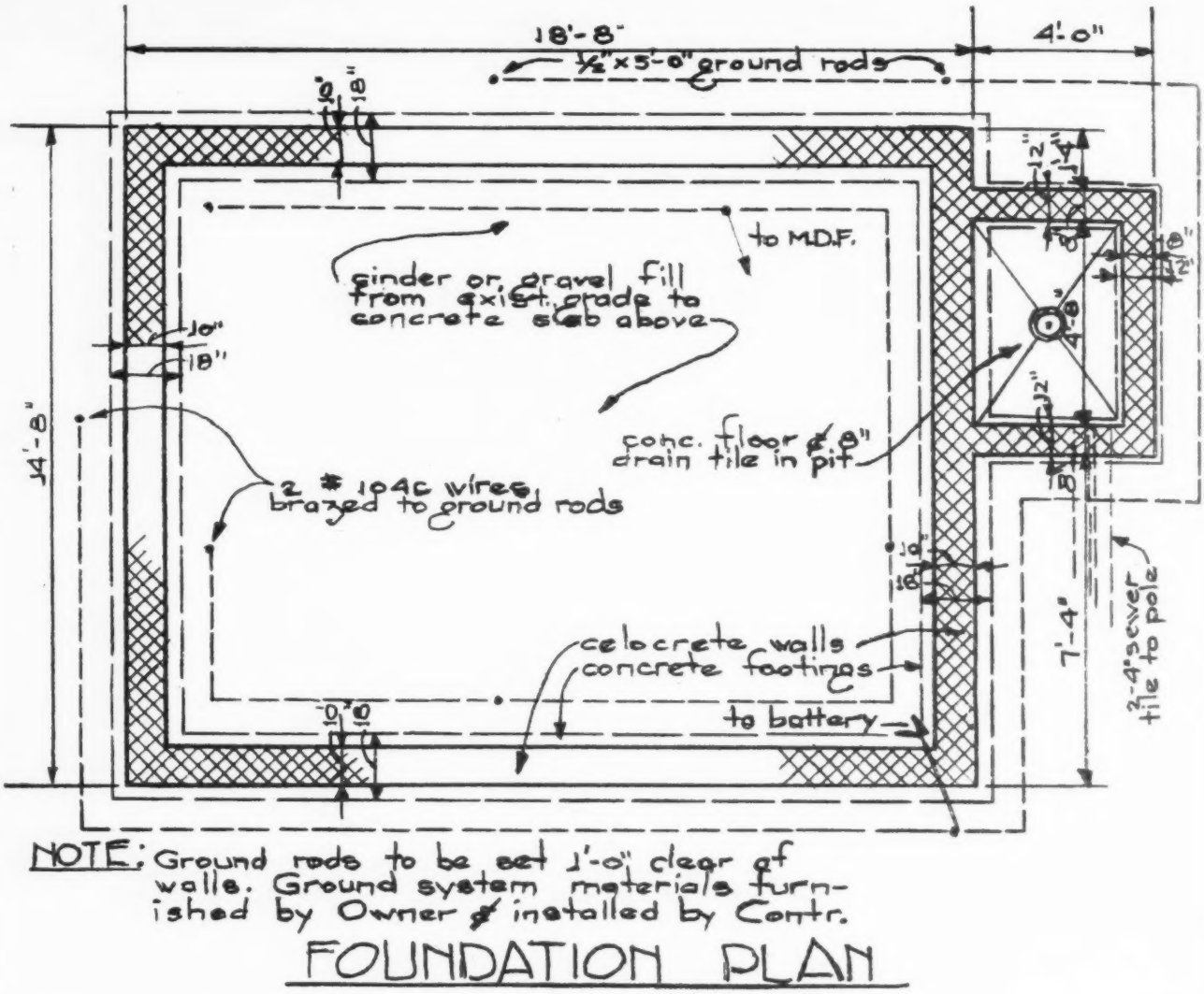
"Concrete shall all be composed of portland cement, sand, gravel or crushed stone and water, machine mixed, and shall develop a compressive strength of 2,500 lbs. per square inch at 28 days. The floor slab shall be waterproofed with Truscon, Antihydro, Medusa, or other approved integral waterproofing. The concrete floor slab and sill are to have a smooth trowelled finish. Sidewalks are all to have a wood float finish; the slab to be cut through to foundation into blocks about 24 sq. ft. in size. These cuts are to be creased and the outer edges rounded to one-half inch radius. The concrete at the manhole is to have a wood float finish and reinforcement bars shall be provided as indicated.

"The Celocrete block units shall be steam cured, straight, uniform, sound and undamaged, and all exposed surfaces shall be smooth faced. Lintels shall be solid, precast and reinforced with six three-eighths inch diameter rods. These units are to be seasoned not less than 28 days before delivery to the job.

"The mortar shall be Brixment or Bessemer Mortar cement mixed as per instructions on the sacks. Joints are to be shoved and full and shall be struck concave with a five-eighths inch diameter round tool.

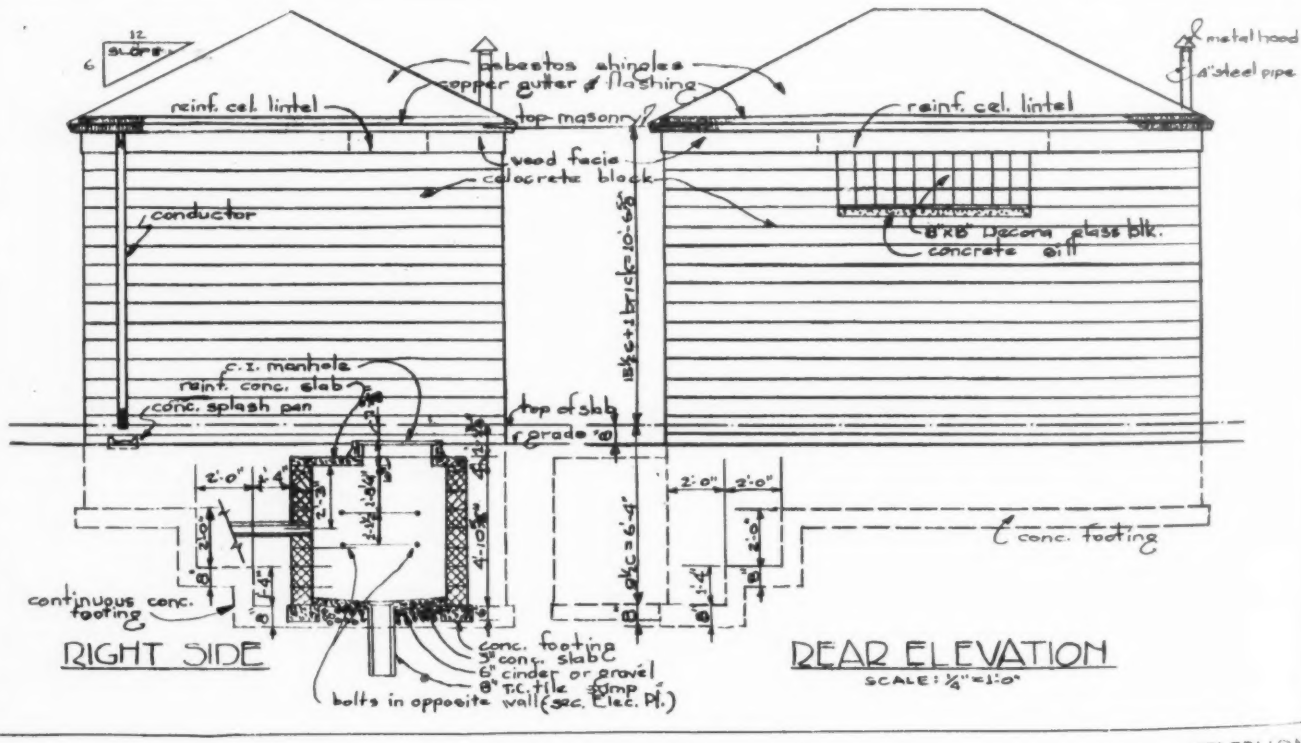
"The glass blocks shall be PC 'Decora' or 'Insulux' design No. 330.

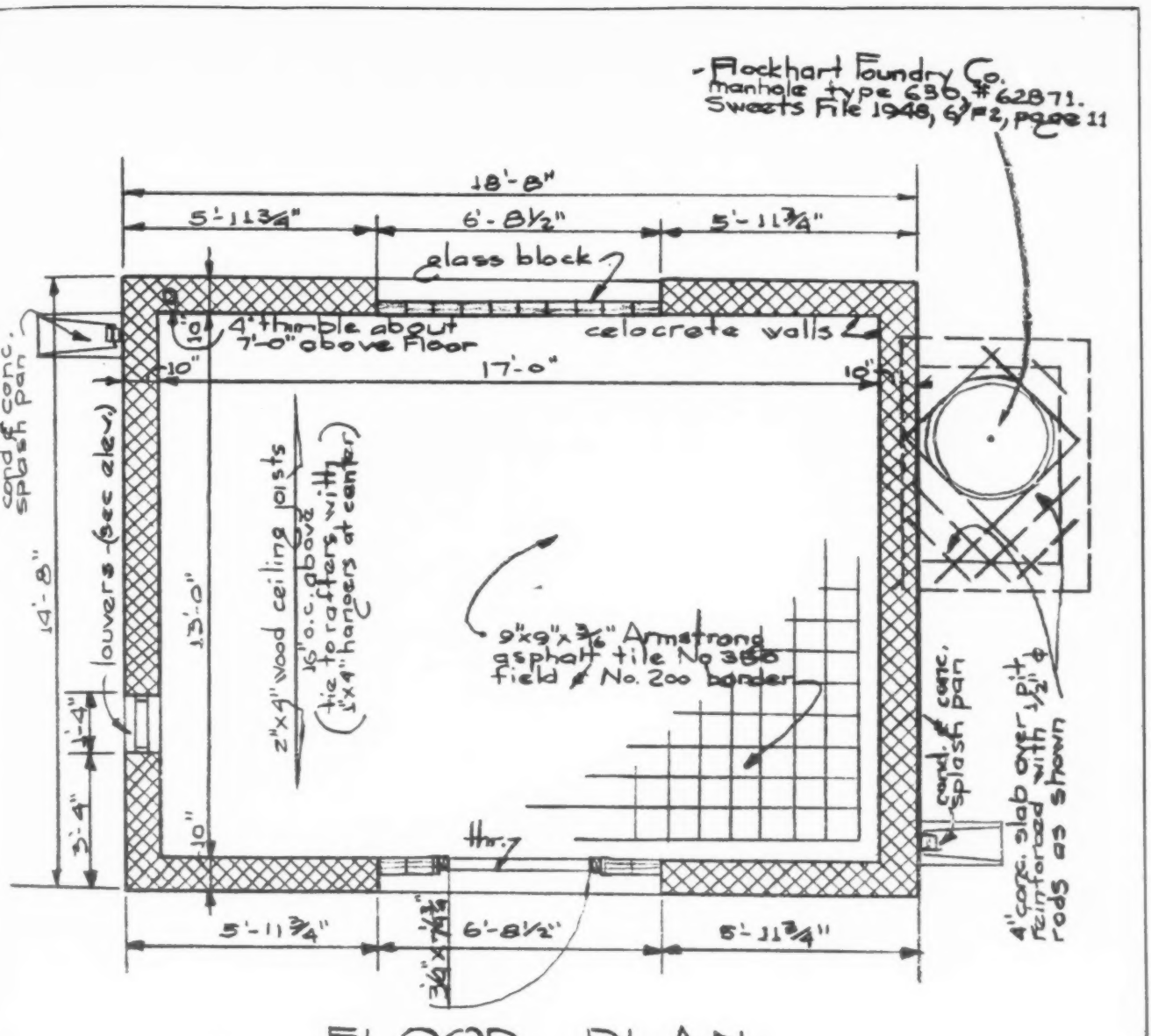
"Lumber for framing shall be No. 1 Douglas Fir, Hemlock or Long Leaf Yellow Pine 848. Door and frame, facia, moulding, etc., shall be of the best Northern White Pine or Cypress. Doors to be W. D. Crooks & Son, or equivalent, non-warping, solid stiles and rails, paneled as specified. The contractor shall furnish channel iron



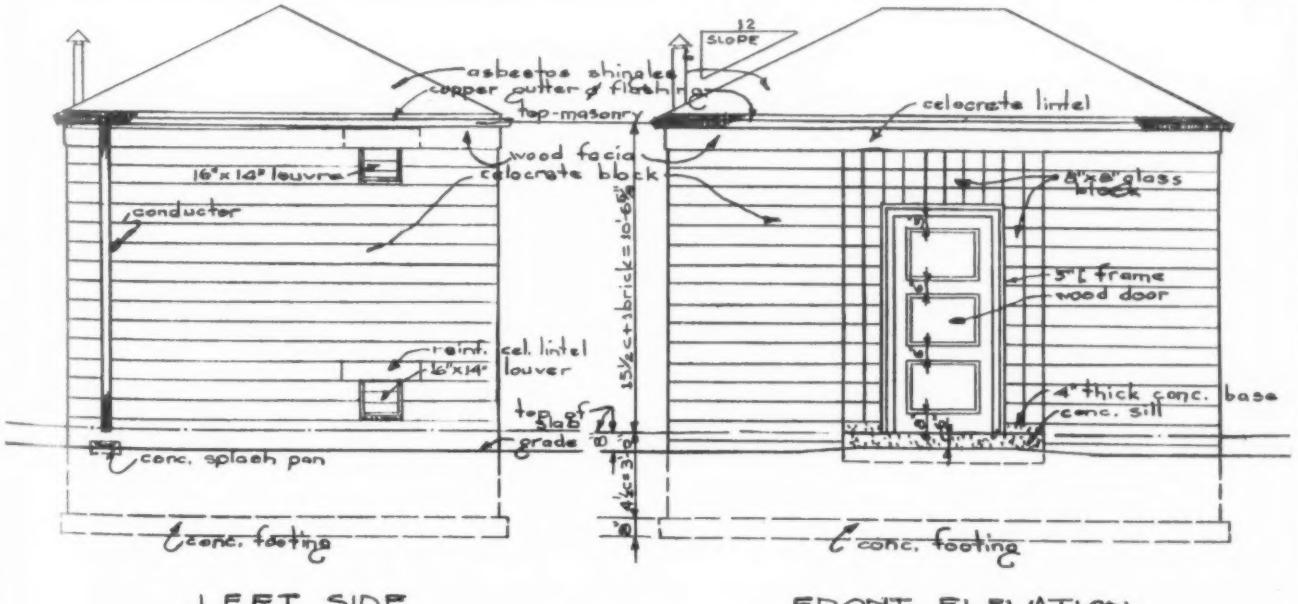
NOTE: Ground rods to be set 1'-0" clear of walls. Ground system materials furnished by Owner & installed by Contr.

FOUNDATION PLAN





FLOOR PLAN



LEFT SIDE

FRONT ELEVATION

door frame complete with bolts, anchors, nails, spikes, screws, etc.

"The roof is to be covered with blue-black, strip shingles, 12 ins. x 36 ins., thick butt, exposed five inches, headlap two inches, as manufactured by Philip Carey Mfg. Co., or Johns-Manville. Hips and ridges shall be finished by the Boston Method, with double shingles at eaves.

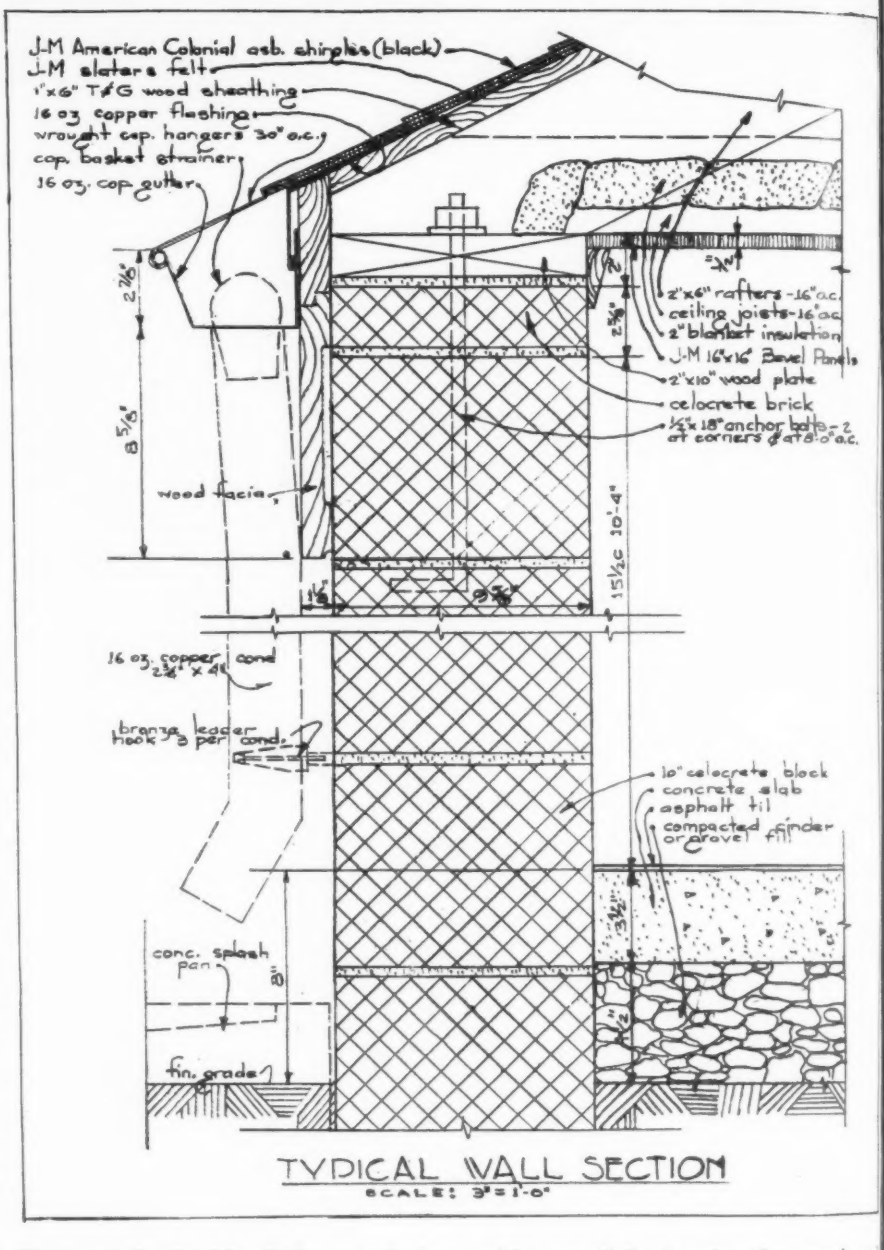
"The ceiling shall be insulated with Johns-Manville or Celotex rock wool batts, Eagle-Picher Type H-3 insulated batts, or equivalent. The ceiling shall be covered with 16 ins. x 16 ins. by ½ in., J-M beveled panels, white finish, blind nailed to the ceiling joists.

"The floor shall be covered with asphalt tile three-sixteenths inch thick of the color and grade specified.

"The gutters, conductors, door cap, etc., shall be of 16-oz. copper, installed in accordance with 'Standard Practice in Sheet Metal Work,' as recommended by the National Association of Sheet Metal Contractors.

"The exposed Celocrete block surfaces, both exterior and interior, shall be painted with two coats of 'Bondex' as manufactured by the Reardon Co. of Chicago. This paint shall be tinted as desired. All exposed wood and metal surfaces shall be painted two coats in addition to the prime coat. The paint shall be the best grade prepared titanium-zinc-lead, Benjamin Moore Co., Glidden Co., DuPont, or other approved brand. The colors of all paint to be selected by the owner."

The following additional information (based on the building illustrated herein) is furnished as it may prove to be of value to smaller companies contemplating the construction of unattended dial exchange buildings.



TYPICAL WALL SECTION
SCALE: 3"=1'-0"

The Building Location

It is always considered desirable to have a surveyor or civil engineer locate the building on the lot and designate all grades. The contractor or builder will then set up all benches at the corners of the building; benches to be up to floor level and all lines run and checked for level and square at all angles.

The Excavation and Foundation

The excavation should be about 16 ins. wider than the foundation wall and extend to the depth indicated on the plans. The only exceptions to be made to this rule are cases where unusual soil conditions are encountered or where a deeper excavation is necessary to get below a low frost line, in which case, extra footings must be placed. The civil engineer or a qualified builder familiar with local conditions can often give valuable advice on these matters. The topsoil should all be saved for use in making the finished grade and building a lawn. All sod and dirt from inside the foundation wall should be removed and the depth should be shown on the plans.

Mixing and Pouring The Concrete Foundation

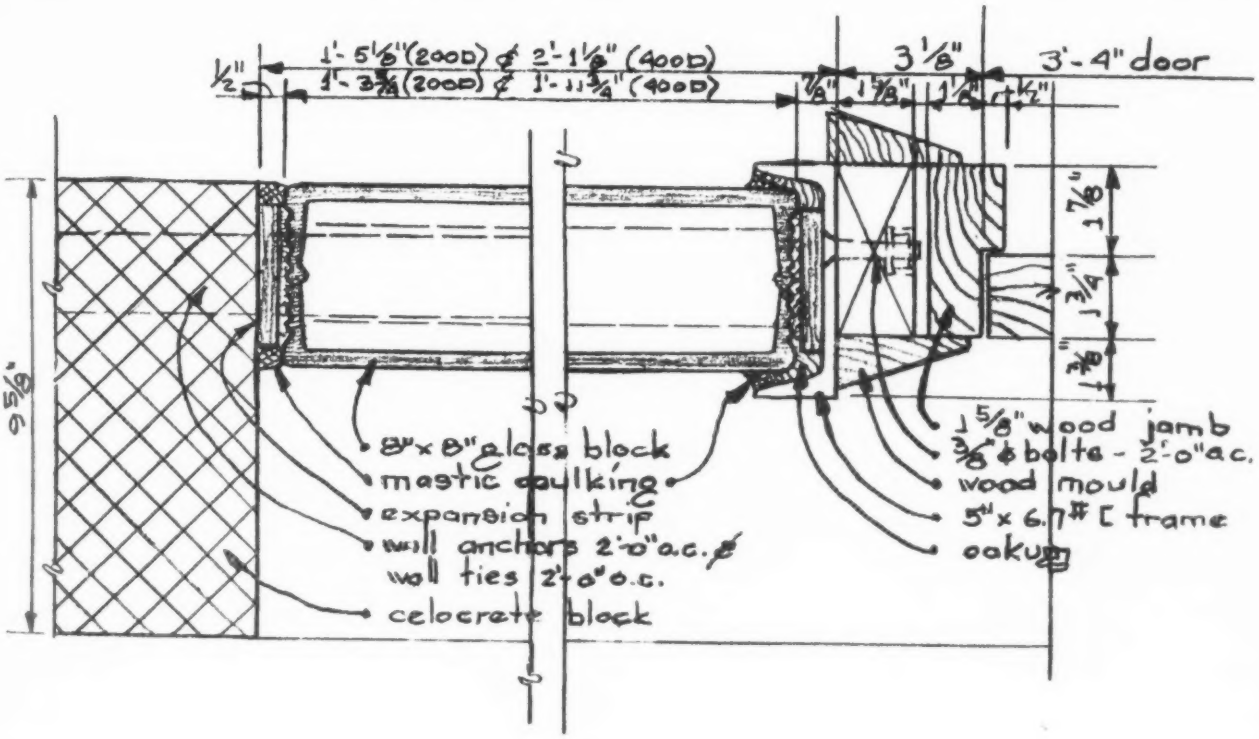
The formula recommended for the mix used in the foundation is 1—2½—5. All gravel should be hard, well washed and not over one and one-quarter inches and graded down to one-half inch stone. All sand should be coarse, sharp, well washed and free from loam. The concrete should all be machine mixed. All gravel, sand and water should be heated in freezing weather and poured walls should be properly covered and protected against freezing. After the foundation has set and is hard, remove the forms, back fill around the wall and tamp hard. Next, finish the outside wall above the grade with a wood float, using fine sand, and cement to a straight smooth surface.

Conduits for Power Wiring to Equipment

Conduits should be placed as shown on the detailed equipment layout drawings and all bends are to be of the long radius type. This is especially true of the conduit that extends from the main frame to the office manhole. In some exchanges, the office manhole may be omitted, if desired, by extending the conduits directly to the cable pole. Experience has proved, however, that it is not desirable to place silk and cotton insulated, lead covered cables in long iron conduits, installed underground.

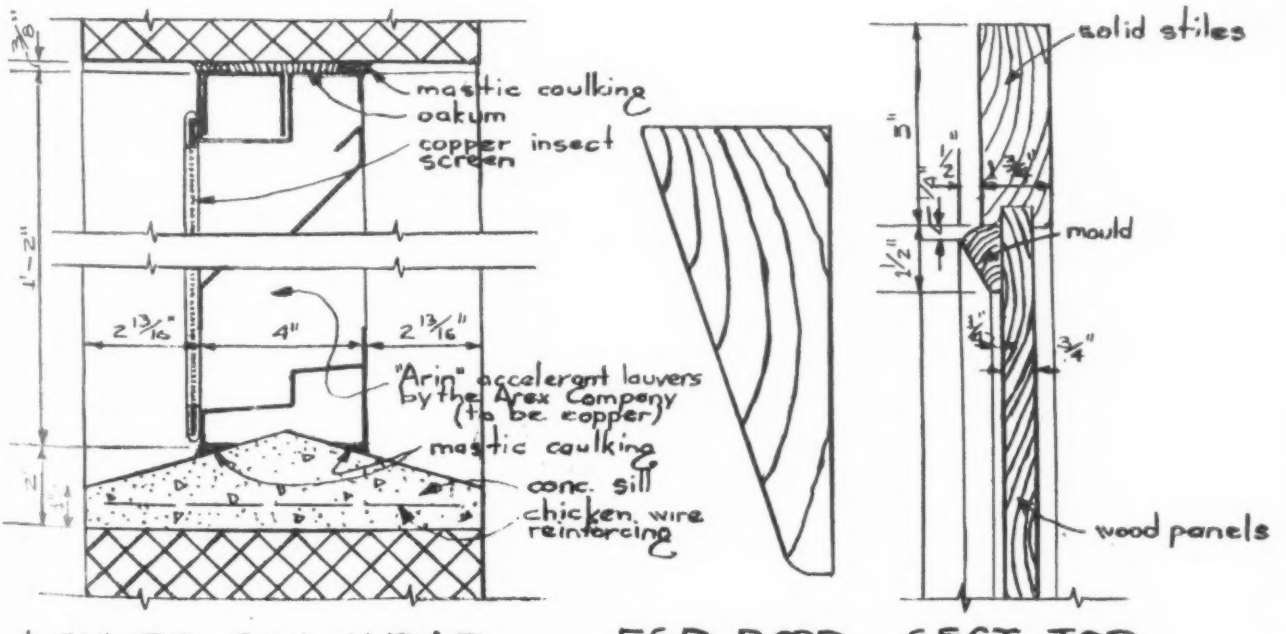
Electrical Work

The best practice in most communities is to have an electrical contractor furnish all labor and material required to provide the necessary electrical wiring. The electrical contractor also



DOORWAY JAMB DETAIL

SCALE: 3" = 1'-0"



LOUVER SILL & HEAD

SCALE: 3" = 1'-0"

F.S.D. DOOR CASING

SECT.-TOP OF DOOR

The fourth and final installment of W. F. Corman's article on "Continuing Property Records For Small Companies" will be published in the Dec. 10 issue.

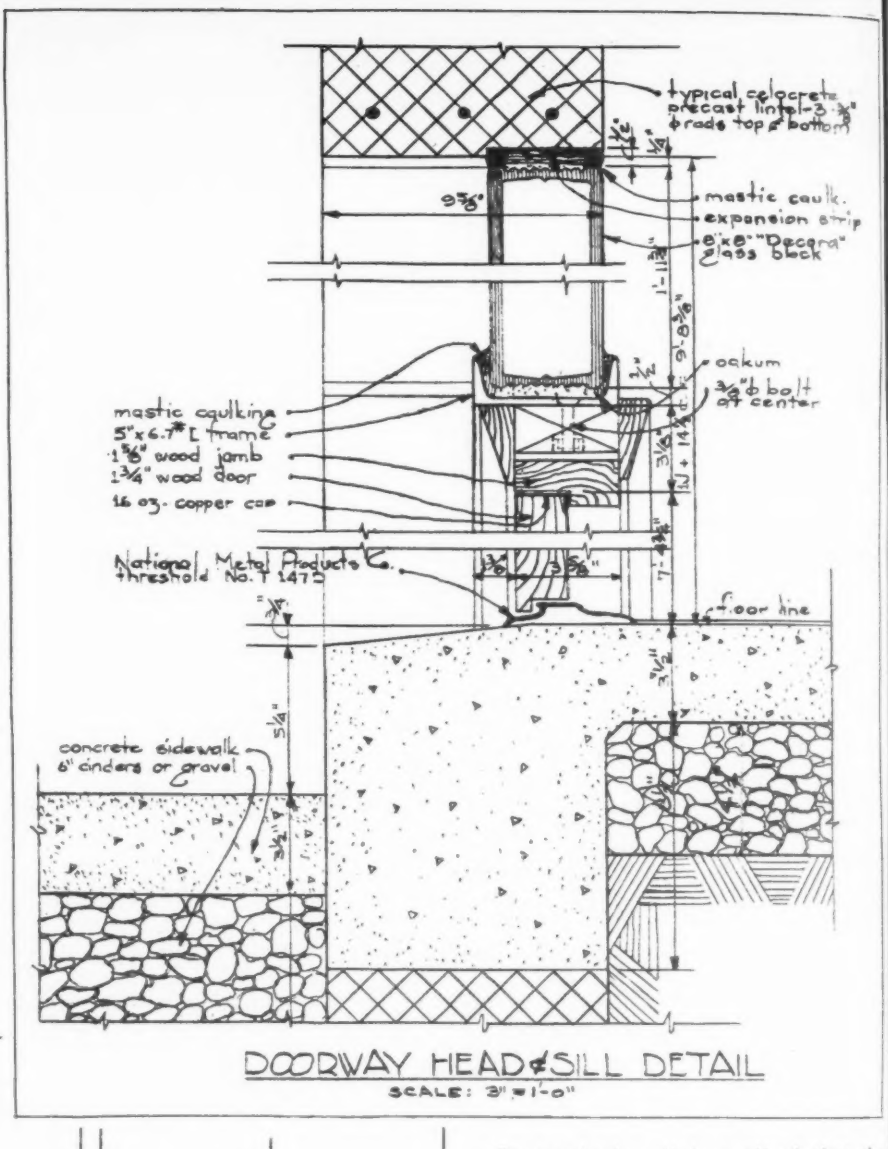
should be required to furnish the building contractor with a meter box to build into the outside wall. It usually proves desirable also to arrange for the electrician to run a steel conduit from the main fuse box to the power board. Conduits also should be extended to the ceiling light outlets and to the main frame to provide an outlet for the soldering iron. The electrician shall provide a one and one-half inch conduit from the power company's pole to the meter box. A lead covered, three conductor No. 4 wire service cable should be provided for the smaller buildings and a three conductor No. 1 wire cable for the larger unattended dial exchange buildings. This size service will prove adequate for the operation of unit heaters, if specified.

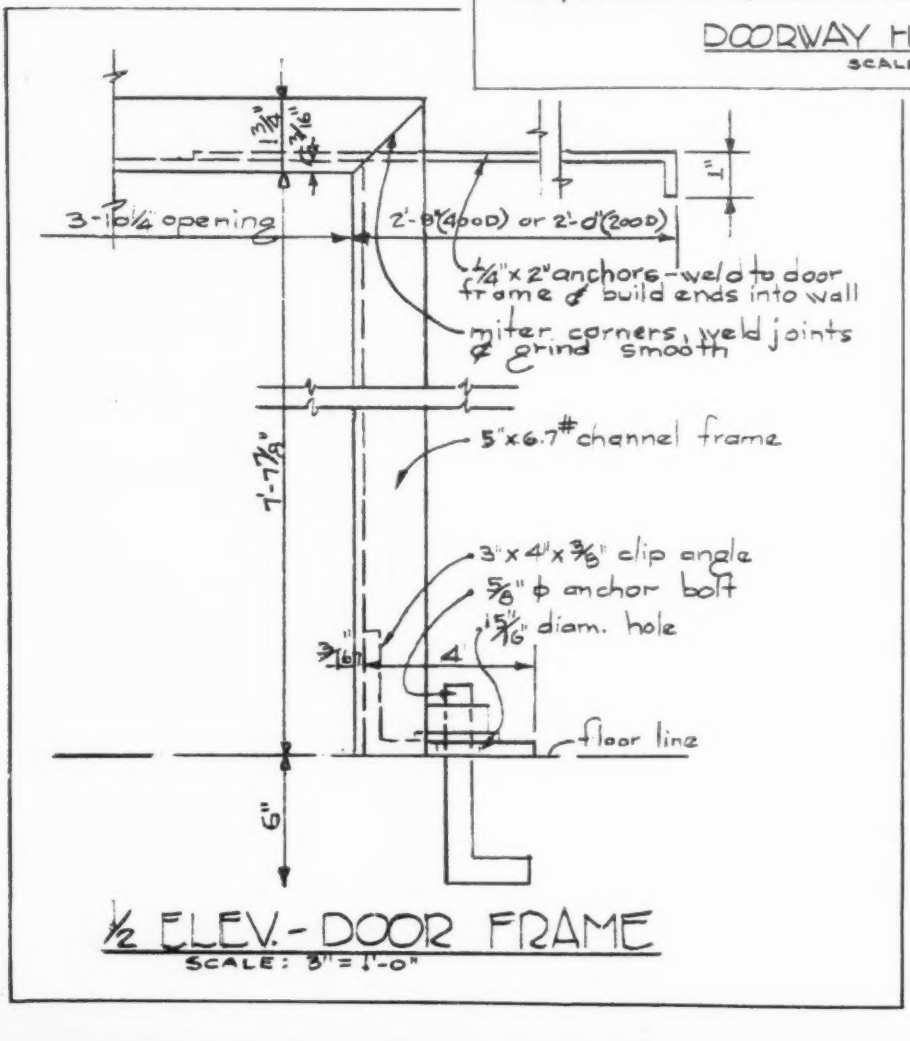
Hardware

The hardware used in this type of building should be of an approved type and it is desired to call attention to the fact that all outside parts such as door butts, locks, etc., should be of solid brass to prevent rusting. The locks should be of the Corbin type and all keyed alike to the grand master key used through the entire system when several exchanges are involved.

Grading

The final work of the contractor is to grade the lot and cart away all surplus dirt and rubbish. The lawn may be sodded or seeded in grass.




3-10 1/4 opening
2'-8"(400D) or 2'-0"(200D)
1/4"x2" anchors-weld to door frame & build ends into wall
miter corners, weld joints & grind smooth
5"x6.7# channel frame
3"x4"x3/8" clip angle
5/8" ϕ anchor bolt
15/16" diam. hole
floor line
1/2 ELEV.-DOOR FRAME
SCALE: 3" = 1'-0"

In conclusion, it is realized that the plans herein outlined must necessarily be modified in many cases in order to meet local conditions, materials available and special requirements of the telephone company. It is, however, sincerely hoped that this simple description of building procedure, together with the detailed drawings, may prove of some assistance to operating telephone companies, and to the architects and contractors they may retain, in designing and constructing suitable housing required to shelter the expensive equipment needed for the proper functioning of the unattended dial telephone exchange.

* * *

[EDITOR'S NOTE: With many of the smaller Independent telephone companies planning conversion of their exchanges to unattended dial operation, TELEPHONY receives numerous inquiries regarding information on and drawings of buildings to house central office equipment. This article is presented as a reply to these inquiries. We acknowledge with thanks the cooperation of C. E. Jones, vice president of the Pennsylvania Telephone Corp., Erie, Pa., in furnishing data upon which this article is based.]

THIS SMALL COMPANY *Prepared Own Rate Case*

By **RAY J. RIORDAN**
Division Commercial Manager
La Crosse (Wis.) Telephone Corp.
Middle States Telephone Co. of Illinois

"THE Lord helps those who help themselves," even in the matter of rate cases. At least the old axiom was the guiding factor in approaching the problem encountered by the Pulaski (Wis.) Merchants & Farmers Telephone Co., when, a few months ago, the realization came home, as it has to many other telephone companies the nation over, that the need for increased revenues was imperative.

The company had functioned for 28 years on the same rate schedule, weathering depression and lush years, but with the rising tide of costs in labor and materials and no prospect in view of these returning to 1939 levels, an appeal to the Wisconsin Public Service Commission was the only medicine that could aid the ailing patient.

Serving just less than 500 telephones, the property was not blessed with a personnel staff equipped with the know-how for preparation of rate cases. Rather, it operated with a very limited managerial roster. D. E. Riordan, president, who holds a majority control of the stock, is retired from active duty. Mrs. Riordan is secretary-treasurer, and son Robert is the manager,

RAY J. RIORDAN

handling the multitude of duties familiar to those connected with smaller Independent telephone properties. The author, though one of the family, is not a part of the operating echelon.

In view of the scanty and unseasoned crew at hand, the matter of preparing and presenting a rate case in a manner satisfactory to the regulatory commission seemed an insurmountable task. True, certain sources could give assistance, but these were limited and over-burdened with rate work.

After due deliberation, it was finally concluded the problem at hand should be met with available forces.

Since the Wisconsin commission had to be convinced of the real need for an increase in revenues, the first move on the agenda was a visit to the state capital for suggestions.

While there appears to be a tendency on the part of many small companies to view the commission and its staff as an awesome body, the truth revealed that its personnel is quite human and is willing to lend an ear to problems put before it. Naturally, since

PULASKI MERCHANTS & FARMERS TELEPHONE CO.
PULASKI, WISCONSIN
Balance Sheet—September 30, 1948

ASSETS

Cash Accounts	$ 1,380.32	
U. S. Government Bonds	11,215.00	
Accounts Receivable	670.66	
Plant Account—Gross	41,699.62	
Land	300.00	
TOTAL ASSETS		$55,265.60

LIABILITIES, RESERVES & CAPITAL

Current Liabilities		
Accounts Payable	$2,002.12	
Customers' Deposits	949.50	
Total Current Liabilities		$ 2,951.62
Reserves		
Reserve for Depreciation	$24,383.19	
Reserve for Extensions	1,914.25	
Total Reserves		26,297.44
Capital Accounts		
Stock Issued	$15,450.00	
Surplus	10,566.54	
Total Capital Accounts		26,016.54
TOTAL LIABILITIES, RESERVES & CAPITAL		$55,265.60

SURPLUS ANALYSIS—SEPTEMBER 30, 1948

Balance January 1, 1948	$10,450.82
Add: Net Profit for Period	579.22
	11,030.04
Deduct: Dividend Paid	463.50
SURPLUS BALANCE—SEPTEMBER 30, 1948	$10,566.54

the objective of the commission is to protect the public's welfare, any appeal put forth by a utility company must be very thoroughly reviewed before a decision can be handed down, but the commission, too, has an obligation to permit utility companies adequate return on investments.

In our case, the commission staff members were not only courteous, but helpful and generous with their time. They briefly outlined the material required for the hearing and provided forms upon which our rate increase petition could be prepared.

Back on home ground the real work commenced. First, the amount of increased revenue required had to be determined. Since the company was on the verge of installing its 500th station, it would soon be subject to the Fair Labor Standards Act. Traffic, maintenance and labor costs would rise, and this increase had to be contemplated. The upward trend of other expenses and costs of operation also were scrutinized. With the information determined as to the amount of revenue needed, the next step was the establishment of a rate schedule to provide it.

In the task of setting rates, it was necessary to review the existing schedule, the 28-year-old tariff designed to meet the requirements of a day when telephony was still in swaddling clothes. A ridiculously low business rate of $2.00 was still in effect; this applied whether the customer had one or two-party service, there being no differential. A non-subscriber charge of 10 cents was in effect—a levy aimed at telephone "moochers," but one which produced more headaches for the traffic

PULASKI MERCHANTS & FARMERS TELEPHONE CO.
STATEMENT AS OF DECEMBER 31, 1947
ASSETS AND OTHER DEBITS

Telephone Plant in Service	$39,203.32
Property Held for Future Telephone Use	300.00
Total	$39,503.32
Investment in Securities	11,215.00
Cash and Working Funds	1,452.13
Accounts Receivable	464.99
Total	$52,635.44

LIABILITIES AND OTHER CREDITS

Common Capital Stock	$15,450.00
Accounts Payable	185.00
Customers' Deposits	890.00
Reserve for Depreciation of Telephone Plant	23,745.37
Contributions of Telephone Plant	1,914.25
Surplus	10,450.82
Total Liabilities and Other Credits	$52,635.44

INCOME STATEMENT

Operating Revenues	$15,781.94
Operating Revenue Deductions:	
Telephone Operating Expenses	$12,636.55
Depreciation Expense	1,743.48
Taxes Other Than Income	672.55
Income Taxes	403.19
Total Operating Revenue Deductions	$15,455.77
Net Operating Revenue	326.17
Non-Operating Income:	
Interest on Bonds	245.00
Interest on Bonds Redeemed	390.00
Miscellaneous Non-Operating Expenses	73.36
Total	$ 708.36
Gross Income	$ 1,034.53
Balance of Income to Surplus	$ 1,034.53

OPERATING REVENUES

Local Service Revenues:	
Subscribers' Station Revenues	$ 9,438.10
Other Local Service Revenues	467.05
Toll Service Revenues	5,976.65
Miscellaneous Operating Revenues	63.17
Total	$15,945.27
Deduct: Uncollectible Revenues	163.33
Total Operating Revenues	$15,781.94

PULASKI MERCHANTS & FARMERS TELEPHONE CO.
PULASKI, WISCONSIN
Detail of Income & Expenses

	Actual Jan. 1 to Oct. 1, 1948		Actual 9 Mos. of 1948 Increased to Annual Basis		Adjustments to Income & Expenses as Outlined		Pro Forma Income & Expense Statement "Annual"	
REVENUES								
Telephone Rentals	$8,308.50		$11,078.00					
Less: Discounts	862.25		1,149.67					
Net Telephone Rentals		$ 7,446.25		$ 9,928.33	(Net)	$3,160.20		$13,088.53
Toll Service Commissions		5,167.72		6,890.29				6,890.29
Non-Subscribers		393.30		524.40				524.40
Materials		26.00		34.67				34.67
Miscellaneous Income		46.57		62.09				62.09
Interest Earned		106.24		141.65				141.65
Total Revenues		13,186.08		17,581.43				20,741.63
OPERATING EXPENSES								
Taxes—Village	445.71		594.28				594.28	
Taxes—Federal Income	281.62		240.18		$ 4.48		244.66	
Taxes—State Income	20.68		18.89		2.32		21.21	
Taxes—Social Security	75.30		100.40		30.72		131.12	
Taxes—State Unemployment	24.06		32.08		85.33		117.41	
Operators' Salaries	2,888.04		3,850.72		1,826.04		5,676.76	
Office Salaries	1,350.00		1,800.00				1,800.00	
Repair Labor	1,906.23		2,541.64		1,246.20		3,787.84	
Materials & Supplies	1,029.43		1,372.57				1,372.57	
Other Maintenance	963.47		1,284.63				1,284.63	
Traffic	930.37		1,240.49				1,240.49	
General Expense	764.63		1,019.51				1,019.51	
Rate Case Expense	110.00		110.00				110.00	
Truck Expense	361.16		481.55				481.55	
Bad Debts	90.92		121.23				121.23	
Depreciation	1,365.24		1,820.32				1,820.32	
Total Operating Expense		12,606.86		16,628.49		3,195.09		19,823.58
NET PROFIT FOR PERIOD		$ 579.22		$ 952.94				$ 918.05

NOTE: The 9 months of actual expenses in 1948 include maintenance, which is understated on an annual basis because the Company does a sizable amount of repair work on poles in the late Fall when farmer labor is available.

PULASKI MERCHANTS & FARMERS TELEPHONE CO.
STATEMENT AS OF DECEMBER 31, 1946
ASSETS AND OTHER DEBITS

Telephone Plant	$38,284.57
Other Investments	7,235.00
Cash and Working Funds	1,528.97
Due from Subscribers and Agents	217.37
Post War Fund	3,610.00
Land	300.00
Total Assets and Other Debits	$51,175.91

LIABILITIES AND OTHER CREDITS

Capital Stock	$15,450.00
Accounts Payable	441.04
Customers' Deposits	820.00
Reserve for Depreciation of Telephone Plant	23,134.33
Contributions of Telephone Plant	1,914.25
Surplus	9,416.29
Total Liabilities and Other Credits	$51,175.91

INCOME STATEMENT

Operating Revenues:	
Local Service Revenues	$ 9,466.95
Toll Service Revenues	6,291.20
Miscellaneous Operating Revenues	140.09
Total	$15,898.24
Deduct Uncollectible Operating Revenues	22.85
Total Operating Revenues	$15,875.39
Operating Revenue Deductions:	
Telephone Operating Expenses	
Repair Labor	$ 3,035.08
Repair Material and Supplies	1,127.05
Miscellaneous Maintenance Expenses	566.21
Truck Expense	768.35
Operator's Wages	2,941.28
Other Traffic Expenses	826.08
General Office Salaries	1,572.00
Other General Expenses	855.77
Total Telephone Operating Expenses	$11,691.82
Depreciation Expense	1,686.04
Taxes Other Than Income Taxes	744.46
Income Taxes	685.77
Total Operating Revenue Deductions	$14,808.09
Net Operating Revenues	1,067.30
Non-Operating Revenues	115.68
Gross Income	1,182.98
Dividend Appropriations of Income	772.50
Balance of Net Income to Surplus	$ 410.48

force than Carter has pills, and an item which resulted in grief for the bookkeeper. Nor was the fee a boon to public relations. The service connection charge was refundable at the end of two years. There was no provision for off-premise extensions, excess mileage or the usual miscellaneous charges.

After determining the loss involved with discontinuance of the non-subscriber charge and handset charge, it was possible to work out a schedule of rates that would produce the required revenue and, meanwhile, establish acceptable differentials. In working out these details an eye to public acceptance of the rates was a factor of importance.

Preparation of the petition was then a simple matter, since the commission's form is self-explanatory. But, before mailing this, a letter was sent to the customers in which the need for the new rates was explained. Illustrations referring to increased costs were used and one of the closing paragraphs was particularly planned to bring home the fact the telephone company's problem was no stranger than that of its customers, that it, too, had been "caught in the rising tide of high costs just as the butcher, the baker, the garageman, the hardware and implement dealer, the storekeeper, the tavern keeper, the farmer, and all those with whom we do business." The thought behind this was that direct reference to the businesses operated by subscribers would make them conscious of the telephone company's problem through their own.

The letter was used as a bill insert, the mailing being simultaneous with that of the petition so that customers would receive their first knowledge of the appeal through the company rather than via a news release from the commission.

A few days later, notification of the commission hearing date arrived and preparation of exhibits for the appearance was underway. The hearing being set for Oct. 19, 1948, a balance sheet for the period ending in September was completed. Next came a pro forma detail of expenses and income, to show what the net increase would provide as a return on the rate base or depreciated plant valuation.

To indicate the trend, statements for the two previous years were included as exhibits, as well as a statement showing the schedule of present and proposed rates, with the revenue increase the new rates would produce, and a detailed breakdown of wage expenses for the first nine months of 1948, together with the effect increased wages would show on an annual basis. Because the Bell strike in 1947 had affected long distance revenues, a comparison study of toll revenues for 1947 with those for 1948 was produced.

With the statistical work completed, a narrative explaining the details of the case was prepared. In this was mentioned the many projects ahead which would necessitate additional help. A justification of increased traffic costs was outlined. Explanation of the requested rate schedule merited a paragraph. In fact, an attempt was made to answer any question that could be put forth by the commission in its resumé of the case. The thought was that perhaps it would be possible to present a "*Package Rate Case*" which could be merely turned over to the examiner.

Actually, that was about what happened. On the day of the commission hearing, no public opposition was present. While parliamentary procedure would not permit submitting the exhibit without testimony, a company representative was directed to read the narrative and call the reporters' attention, should there be any diversion from it.

The entire proceeding was over in 20 minutes. A month later, or 81 days from the date of filing, the order was received. That is record time in the state since statute limitations are such that the application could not be processed in less time.

While cases for various companies may vary somewhat, the basic plan is the same and can be easily followed. True, a good set of record keeping books is essential, but in these days of extremely close government surveillance, these should be the rule rather than the exception. Cost of handling the rate case was negligible.

PULASKI MERCHANTS & FARMERS TELEPHONE CO.

Statement Showing Schedule of Present and Proposed Rates and Estimates of Annual Increased Revenue Under Proposed Rates Based on Subscriber Stations Served on September 1, 1948

Classification	9-1-48 Station Development	Present Rates Monthly Net Rate	Present Rates Revenue	Proposed Rates Monthly Net Rate	Proposed Rates Revenue
BUSINESS					
1-Party	62	2.00	124.00	3.50	217.00
2-Party	10	2.00	20.00	3.00	30.00
Public Pay	2				
Rural	46	1.75	80.50	2.50	115.00
Extension	21	.75	15.75	1.00	21.00
RESIDENCE					
1-Party	15	2.00	30.00	2.50	37.50
2-Party	6	2.00	12.00	2.25	13.50
4-Party	63	1.50	94.50	2.00	126.00
Rural	269	1.50	403.50	2.00	538.00
Extension	3	.60	1.80	.75	2.25
MISCELLANEOUS					
Handsets	*47	.25	11.75		
Extension Bell	* 8	.25	2.00	.30	2.40
Six-Inch Bell	* 4	.35	1.40	.40	1.60
Totals	497		797.20		1,104.25
Monthly Increase					307.25
Annual Increase					3,684.60
Less Non-Subscriber Charge revenue based on monthly average for period 1-1-48 to 9-30-48					524.40
Net Annual Increase					3,160.20

*Indicates Equipment is not included in Station Development total.

Three rules might stand as the guide in handling of any case:

(1) Discuss the problem with the commission staff and save unnecessary work.

(2) Be specific in evidence.

(3) Prepare the public for the rate increase in advance.

When the case was concluded another insert was included with the first bills carrying the new rates, in which reference was made to the fact that the commission had found the old rates "unreasonable because of inadequacy" and had termed the new schedule acceptable.

The result? One customer registered a mild complaint and several comments were received stating the letter preceding the case was so understandable it left no doubt as to the need for new rates.

While there seems to be a tendency for economic conditions to become more stable at this time, new minimum wage requirements may force smaller companies the country over to review their revenues again. It would seem that those actually operating the properties would be best equipped to prepare a thorough and sincere plea for the rate relief needed. Who, better than the ailing patient, can best tell the doctor just where the pain bothers him the most?

The so-called *"Package Rate Case"* designed by the Pulaski Merchants & Farmers Telephone Co. consisted of an "Index of Contents," a "Narrative" and several exhibits.

The index read as follows:

BEFORE THE PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of the Pulaski Merchants & Farmers Telephone Co. for Authority to Increase Rates.	**2U 2844**

INDEX OF CONTENTS

(1) Narrative.

(2) Balance Sheet—Sept. 30, 1948.

(3) Pro Forma Detail of Expenses and Income.

(4) Statement as of Dec. 31, 1947.

(5) Statement as of Dec. 31, 1946.

(6) Statement Showing Schedule of Present and Proposed Rates.

(7) Wage Expense January through September, 1948 and Estimate of Anticipated Increased Payroll.

(8) Comparison of Net Toll Revenues by Month for 1947 and for First Nine Months of 1948.

Following is the text of the Narrative which preceded the exhibits in the petition:

W.P.S.C No. 2U 2844

Application of the Pulaski Merchants & Farmers Telephone Co. for Authority to Increase Rates.	**2U 2844**

NARRATIVE

It is desired to introduce this case by pointing to the fact that the rates now being charged by the Pulaski Merchants & Farmers Telephone Co. were placed in effect 28 years ago. It is scarcely necessary to cite that during the 28-year period costs of operating have greatly increased. True, revenues have risen in recent years but not in accordance with operational costs.

Today the company is faced with the problem of obtaining employes on a highly competitive labor market at earnings which permit only the payment of minimum wages; its station development has reached a point where it now is subject to regulations of the Fair Labor Standards Act, calling for time and a half for hours worked in excess of 40 per week, increased traffic makes it imperative that for the continuance of good service additional help be employed at the switchboard during certain periods of the day, and the mounting demand for service requires the extension of new facilities to supplement those which are presently overloaded.

It might be mentioned here that within the past three weeks the com-

PULASKI MERCHANTS & FARMERS TELEPHONE CO.

A Comparison of Net Toll Revenues by Month for 1947 and for the first 9 Months of 1948

Month	Net Toll Revenue 1947	Net Toll Revenue 1948	Increase by Month 1948 Over 1947
January	533.46	539.13	5.67
February	469.42	558.02	88.60
March	524.06	525.82	1.76
April	506.50	511.75	5.25
May	*306.54	566.75	260.21
June	*260.59	557.75	297.16
July	522.67	621.20	98.53
August	534.15	652.21	118.06
September	562.02	635.09	73.07
October	629.17		
November	567.04		
December	561.03		
Totals	5,976.65	5,167.72	948.31

*Indicates Toll Revenues Effected by Bell Strike.

Average net toll revenue per month, 1947, excluding strike months of May and June	540.95
Average net toll revenue per month, 1948, based on first 9 months of the year	576.19
Average monthly increase net toll revenue, 1948, as compared to 1947	35.14

pany was faced with a traffic employment crisis. Though all operators were advised that a petition was on file requesting higher rates so that wages could be adjusted one attempted to instigate a strike. Fortunately one of the girls, cognizant of her duty, would not join the movement. However, two employes gave notice that unless wages were raised within two weeks of Sept. 24, the day the move began, they would leave. One has since left but the other remained. Meanwhile the company was faced with the matter of finding a replacement and to accomplish this it was necessary to go outside the Pulaski labor market and hire a woman living 22 miles distant. In less than 24 months eight girls have been trained and have left to accept better paying jobs elsewhere in the community.

The company has endeavored to conduct its affairs in a conservative and efficient manner, bearing in mind its duty to render service at the lowest possible rates consistent with good service.

Many discrepancies are present in the existing rate schedule, which it is hoped can be eliminated with the public service commission's approval.

To maintain a bare net return the company has enforced a non-subscriber fee of 10 cents per call which has proven something of a nuisance, affecting public relationship and resulting in extra work for the traffic force and the bookkeeper.

The rates have never recognized a differential in the value of single party over two party service, the rates for both grades being identical. It is the objective, in this hearing, to rectify that condition. Filings submitted Sept. 8 list differentials between one and two-party business main stations and one, two and four-party residence main stations and are consistent with rates charged by most exchanges of like size throughout the state.

Over a period of time subscribers on multi-party lines within the village have been regrouped so that service now is rendered on a four-party basis. No provision was made in Exhibit No. 5 (Statement Showing Schedule of Present and Proposed Rates) for possible regrading of one-party business or residence customers to lower grades should proposed rates be accepted. The company feels the call for this, if any, will be negligible. The greatest raise will occur in the business one-party classification affecting 62 stations, these located in Pulaski's leading professional and business establishments. The raise for residential users, in all but six instances, will be only 50 cents per month.

As exhibits will bear out, one of the greatest problems faced at this time is the maintenance of an adequate operator force and the employment of sufficient help to keep up and construct lines to serve present customers and those awaiting installation of service.

A great deal of the plant has been in place many years and needs rebuilding. Each year the company has made an effort to replace older portions for the betterment of service. This has been accomplished by hiring part time help, consisting of farmers during their "lull" periods and other equally inexperienced persons. Due to the low wage level it has not been possible, particularly in recent years, to retain anyone with experience. This has resulted in an extremely heavy load being placed on the shoulders of the manager, who also acts as combination man, installer, contact man, trouble shooter and bill collector.

Today, with the call for telephones at a peak and the inability to get help consistently, the problem of operation has become a tremendous undertaking.

If the company's rate request is approved an additional full-time combination man will be taken on. It is appreciated all projects ahead cannot be accomplished through efforts of this combination man and the manager alone, that during certain periods of the year more help will be required, and this expense has been estimated in Exhibit No. 6 (Wage Expense Through September, 1948 and Estimate of Anticipated Increased Payroll Cost). To justify this expenditure some of the jobs on the agenda are listed here,

(Please turn to page 62)

PULASKI MERCHANTS & FARMERS TELEPHONE CO.

Wage Expense January Through September, 1948, and Estimate of Anticipated Increased Payroll Cost

The Pulaski Merchants & Farmers Telephone Co. has found it increasingly hard to employ men for assistance in the construction of line extensions, tree trimming, road widening projects, re-arranging and adding of circuits due to its inability to meet wage demands.

If the plea for rate revision is granted by the Public Service Commission of Wisconsin plans have been made to employ a full-time combination-man at $200 per month. In addition part-time workers will be employed periodically to aid with heavy construction work such as: (a) Rural line 14 is presently overloaded. It is the intention to string another circuit and rehabilitate existing facilities for a distance of six miles; (b) Rural line 75 consists of wire that has been in service over 25 years. The greater portion of this is to be replaced to improve transmission; (c) Rural line 26 is heavily loaded and relief as well as rehabilitation is necessary; (d) Lines 30, 31, 71 and 28 extend north from the village, along State Highway 32. This road will be widened in the near future. Reconstruction, tree trimming and addition of a line will take place for a minimum distance of six miles. Wages for part-time help to dig holes, string wire, etc., are projected at $660.

Wages Paid Extra Help January Through September

Month	1948
January	$ 99.60
February	237.87
March	222.37
April	171.61
May	121.67
June	134.69
July	124.22
August	131.45
September	287.88
Total	$1,531.36

Presently paid as a monthly average to extra help	170.15	Estimated Salary full-time Combination man	200.00
		Estimated average monthly increase for part-time workers	55.00
		Increase Manager's Salary $256 to $275	19.00
	170.15		274.00
Estimated added monthly wage costs plant employes and manager			103.85
Estimated annual increase wage costs plant employes and manager			$1,246.20

Within less than a month from the date of hearing the Pulaski Merchants & Farmers Telephone Co. will have a station development exceeding 500—held orders on file totaling 22.

As a result the company will be subject to provisions of Section 7 of the "Fair Labor Standards Act of 1938" necessitating the payment of time and one-half for hours worked in excess of 40 per week by an employe.

In addition, the company has experienced considerable hardship in obtaining and keeping operators due to severe competition on the community's labor market. A shoe factory employing approximately 200 girls at a wage scale ranging from 45 to 90 cents per hour is the primary employer in the village.

With earnings at a low level, the company has only been able to maintain a 40 to 50-cents per hour schedule resulting in a frequent turn-over of the traffic force.

At the present wages are paid for a 21-hour work day. If the company's petition for relief is granted this is to be increased to 25 hours for six days per week so that two operators can attend the two position switchboard during the morning and evening "busy" periods during which both local and toll traffic is extremely heavy. The Sunday work day will remain at 21 hours.

Under this arrangement these rates and hours will be in effect:

Operator	Hourly Rate	Annual Hours	Annual Salary	Total Annual Hours	Total Annual Wages	Effect
1	.67	2,080	1,393.60			
	1.01 (OT)	260	262.60	2,340	1,656.20	
2	.67	2,080	1,393.60			
	1.01 (OT)	260	262.60	2,340	1,656.20	
3	.55	1,878	1,032.90	1,878	1,032.90	
4	.55	1,111	611.05	1,111	611.05	
5	.55	1,248	686.40	1,248	686.40	
Totals				8,917	5,642.75	
				Average Monthly Traffic Payroll		470.23
			Hours computed— 52 Sundays @ 21		1,092	
			313 Week Days @ 25		7,825	
			Result annually		8,917	
Total Operator Wages paid January-September, 1948					2,862.53	
			Present Monthly Average Traffic Payroll			318.06
Estimated monthly increase traffic payroll						152.17
Estimated annual increase traffic payroll						1,826.04

(OT) indicates overtime. Operators 1 and 2 full-time employes. Operators 3, 4 and 5 are part-time employes. No. 3 attends school, No. 4 prefers only limited time, and No. 5 splits time between telephone company and another employer.

ABC of the Telephone

By FRANK E. LEE

PART XLVI. Section 1—Rectifiers. The preceding article in this series appeared in the Sept. 24 issue, p. 32.

DIRECT current is used extensively in many of the circuits that make up the telephone plant. The primary current used to transmit the spoken word is a smooth even flow of direct current. With few exceptions, all telephone relay circuits are designed to operate on direct current. Because of these current demands, some means must be provided to convert commercially available alternating current into smooth flowing direct current.

Usually the conversion of alternating current to direct current is made by either a dc motor generator, or a rectifier unit. Of these two types of con-

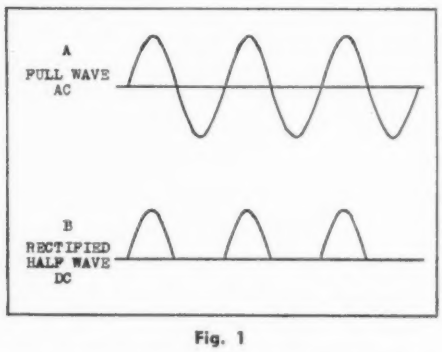


Fig. 1

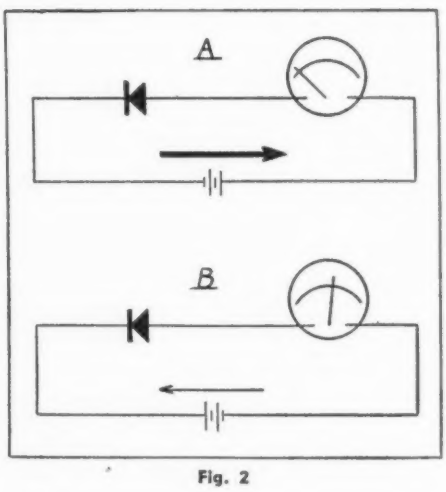


Fig. 2

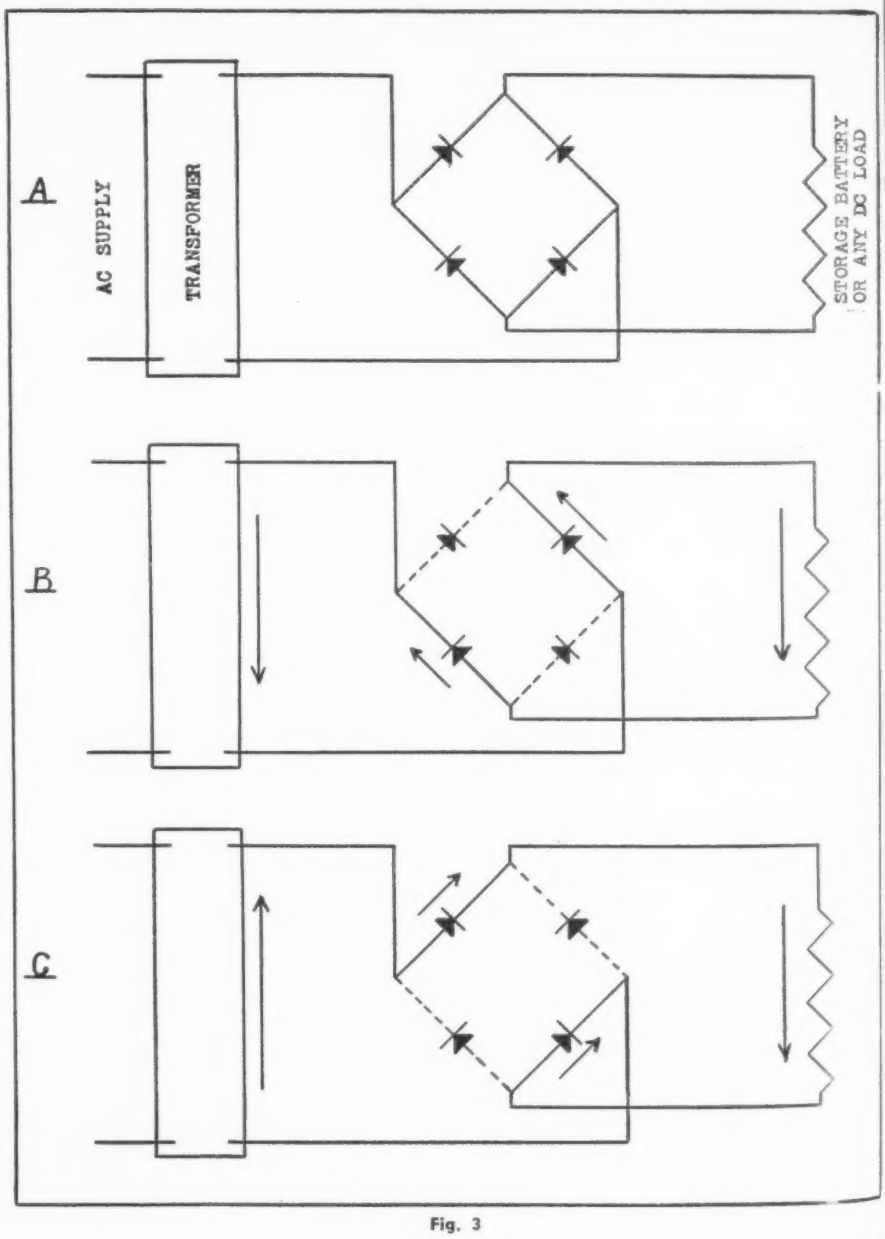


Fig. 3

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version units, the motor generator is more easily understood. Perhaps this fact is true because the motor generator is a moving piece of machinery. The armature can be watched as it moves through the magnetic field created by the field coils. The brushes are readily visible as they make contact with the segments of the commutator rings. By applying the principles of generators, as discussed in a previous installment of this series, there is little left to the imagination concerning the operation of a direct current motor generator set.

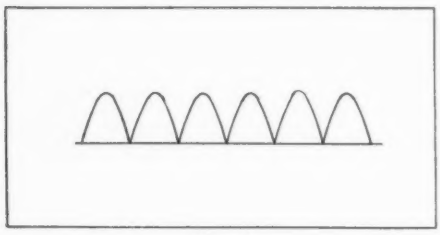

Fig. 4

However, when the discussion is turned to rectifiers, a decidedly different set of conditions is found. These conditions are such that the understanding of how a rectifier works may be a little more difficult to comprehend.

The first question that arises is, "What is a rectifier?" Simply stated, a rectifier is a device that converts alternating current to direct current. To do this, the rectifier usually has a substantially greater conductivity in one direction of current flow than in the other. The essence of this arrangement in a half wave rectifier is to permit the flow of only one-half of the alternating current wave. The other half of the alternating current wave is not permitted to flow through the rectifier unit. This principle is illustrated graphically in *Fig. 1*. PART A of this illustration shows that an ac voltage creates a wave pattern both above and below a zero reference line. If only the upper half of each wave is permitted to pass through the rectifier unit, the wave pattern is reduced to a series of impulses, all effective in the same direction from the reference line (see *Fig. 1-B*). This action is the basis of all rectifying principles, and constitutes rectification or conversion of alternating current to direct current.

How the Rectifier Works

At first thought, the operation of a metallic rectifier represents a rather unusual phenomenon in electric current action. The unusual characteristic occurs because of the action of electric current flowing through chemically different metallic discs. As an example, consider a simple circuit consisting of a battery, meter, and simple rectifier pile. The rectifier pile consists of a copper disc and a copper oxide disc held firmly together, as shown in *Fig. 2-A*. When the battery is connected so that the direction of current flow is from the copper oxide to the copper disc, the meter will show a substantial amount of current flowing. However, if the battery connectors are reversed, as shown in *Fig. 2-B*, very little current will flow from the copper to the copper oxide. The current action that occurs in the disc type rectifier provides the basis of effectively dividing a full cycle of an alternating current wave. The word "dividing" in this instance means the alternating current wave is separated into effective and non-effective segments.

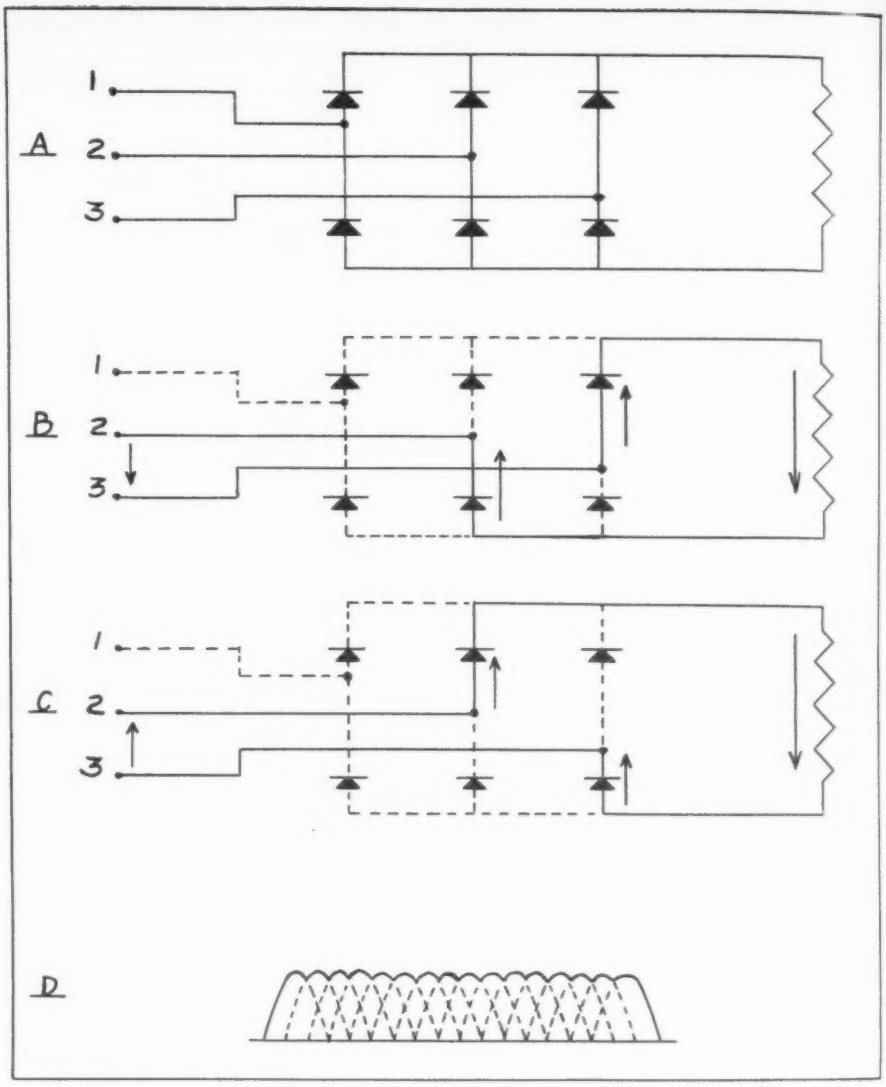

Fig. 5

Looking back for a moment at *Fig. 1-B*, the fact is apparent that the series of impulses created when the ac wave is divided would be most undesirable. This fact is true especially where a smooth flow of dc is required. For this reason, the next step is to utilize the remaining half of the wave.

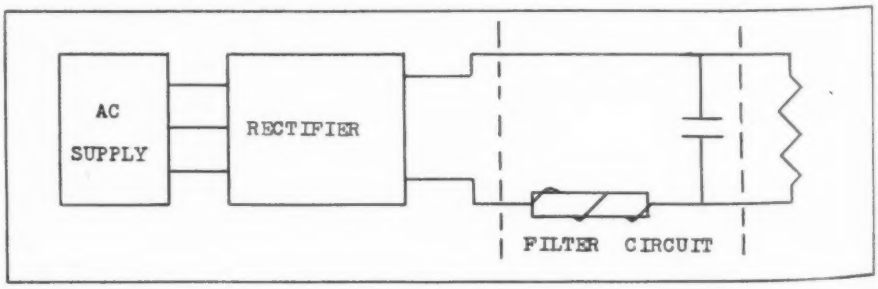

Fig. 6

In *Fig. 3-A*, four sets of copper and copper oxide discs are connected in a network circuit that includes an ac supply, a transformer, and a storage battery. The purpose of this circuit

(Please turn to page 62)

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IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

Economics of replacing five-cent paystation rate with 10-cent charge discussed. . . . ICC moves in on local transit regulation . . . CWA perturbed over increase in Bell System minimum pension. . . . REA co-op runs commercial electric company out of business.

The Vanishing Buffalo

A RECENT issue of the Baltimore *Sun* featured one of its clever "Yardley" cartoons dealing with the declining usefulness of that once popular monetary unit—the nickel. In the procession of things which used to be purchased with a mere five-cent piece, were shown such items as the hot dog, the candy bar, the old nickelodeon silent movies, the old fat Sunday paper bulging with comics and supplements, the stein of draught beer, the subway fare, and that mythical object which the late Vice President Marshall once said America needed most—a good five-cent cigar.

All of these have long since departed to the oblivion of the good old days. About the only two remaining traditional jobs for a nickel which have become almost institutional are the cup of coffee in the more modest eating houses and the nickel slot in public paystation telephones. And now even these two remnants of a once hardy tribe of American price standards are trembling. Inflationary costs and the Brazilian coffee shortage menace the nickel mug of java even as the increased operating expenses shake the foundations of the nickel telephone call.

For Bell and Independent telephone companies alike, the decision to shift to a higher price for local calls at prepayment stations will be a serious and unpleasant necessity—one to be postponed as long as possible and adopted only after careful consideration of all the angles and complications concerned.

A recent hearing before the Missouri Public Service Commission on Southwestern Bell's application for a rate increase shed some light on the problems that are involved in switching coin telephone calls from five cents to 10 cents. The possibility of increasing the coin telephone calls in this way for both St. Louis and Kansas City was one of the subjects developed. It might be of some passing interest to note that the question was first raised, not by the company, but by a member of the commission, Kyle D. Williams. As a result, L. B. Leverington, the company's general manager, named some figures on what the change-over from a nickel to a dime would entail.

Leverington estimated that an increase from five to 10 cents, limited to the St. Louis and Kansas City district exchanges, would yield $578,730 a year in additional gross revenue to the company. This would be an increase of 19.7 per cent over the gross receipts accruing to the company from coin telephones in these two urban areas last year. The 1948 receipts were $2,931,058.

Doubling the charge for a call would not double the income, Leverington explained, because of the anticipated decline in volume of calls and because of the effect on commissions and guarantees involved in coin telephone rentals.

It would cost Southwestern Bell $600,000 to $750,000 to make necessary changes in its coin telephone instruments to handle 10-cent calls, Leverington estimated. He asserted that it might take about two years to make these changes, before the higher charge could be put into effect. Commissioner Williams asked whether Bell Telephone Laboratories could not fix a simple device to change coin boxes to a dime. The answer was that even a simple device would take considerable time for changing over.

Missouri is not the first place where the question of boosting public paystation rates above a nickel has been discussed. Some thought has been given to the subject in the Boston area. And in Pennsylvania the state commission has raised the question of whether a continuation of a five-cent charge for local calls at public paystations in some areas might not result in discrimination against regular subscribers if the rates for the latter type service continued to increase.

It is probably true in some places that a continuation of the nickel paystation calls, on a strict cost allocation basis which would take into account the investment and expense directly attributed to handling, does not show a proportionate yield of net revenue—as compared with other classifications of telephone business.

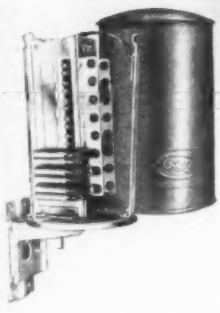
But even here, there are the offsetting factors of public convenience and the knowledge that only a small percentage of local calls made from public paystations are connected with *other* public paystations. In other words, a local call from the paystation is usually made to a regular subscriber station, which averages up the factor of convenience in favor of the regular subscribers.

As shown in the foregoing testimony, the cost alone of making physical changes in public paystation equipment, so as to switch from a nickel to a dime basis, would offset for a considerable time any increase in the revenue that would be obtained from the higher charge. The question might, therefore, boil down to one of whether the present inflationary period (which has made the cost of handling paystation calls so expensive for the companies) is a temporary or passing economic development. If it will be with us indefinitely, and it appears that operating costs are going to keep on rising for the indefinite future, the nickel call may well be on a shaky foundation.

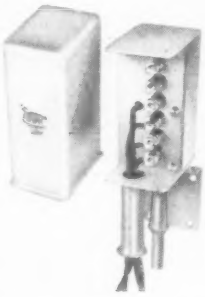
There may come a day when the old faithful nickel will have to go down the sad trail of the nickel hot dog, the stein of beer and all the rest. When that day comes, the nickel won't amount to much more than something

A COMPLETE LINE OF PROTECTIVE TELEPHONE EQUIPMENT

Uniflex Main Frame

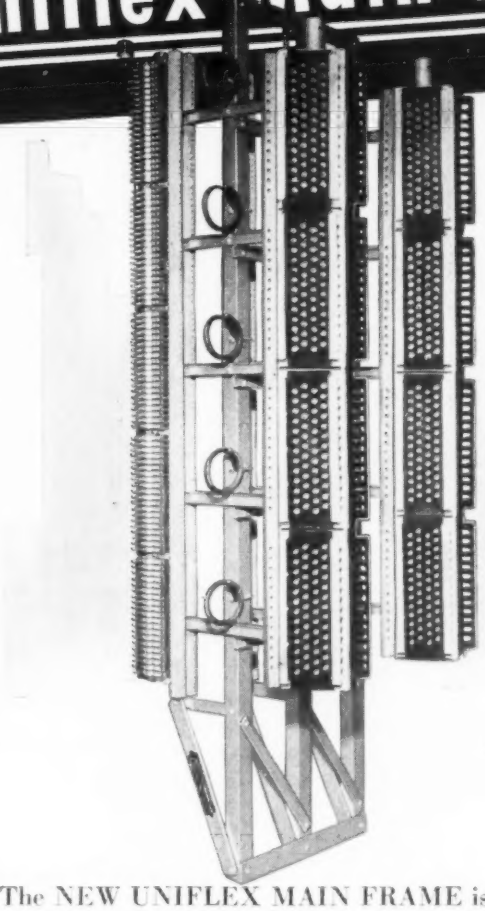


TYPE S-20 POLE CABLE TERMINAL AND PROTECTOR MOUNTING, a protected all steel cable terminal using the H-20 protector units. A self-soldering nozzel and individual insulating knockout holes for drop wires are provided for simple installation.



3 PAIR XB CABLE TERMINAL to eliminate long open-wire bracket lines and reduce the length of subscriber drops. Built with a welded zinc cover, monel face plate, highly insulated terminal studs and a flanged-tube entrance for drop wires.

TYPE 7 HIGH POTENTIAL LIGHTNING ARRESTER for lightning protection for 5 pairs of open-wire circuits. It has moulded bakelite insulation and fanning strip, non-corrosive metal hood, everdur studs and galvanized mounting bracket. Phosphor bronze spring clips accommodate non-grounding True Gap dischargers.

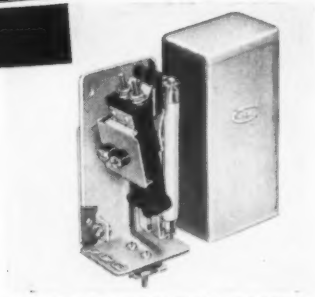


The NEW UNIFLEX MAIN FRAME is adapted for use in all exchanges, including those where the presence of moisture makes higher insulation desirable. It is particularly suitable for unattended dial exchanges where temperature and moisture conditions often affect cable distribution and protection equipment.

Paper cable is terminated directly on the main frame in moisture-proof hermetically sealed cable chambers by the pole cable splicer. This eliminates expensive silk and cotton cable section found in ordinary types of cable distribution. It has been field tested and approved by operating companies and engineers.

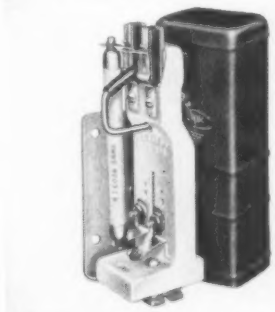
COOK ELECTRIC Company — Since 1897

2700 SOUTHPORT AVENUE • CHICAGO 14, ILLINOIS



TYPE RO SUB-STATION PROTECTOR is equipped with a bracket and heavy zinc hood for rough handling and abuse without the danger of breakage. The Type H-20 Mount with secondary arrestors and heavy studs gives this Sub-Station Protector Mounting higher resistance to breakage from severe electrical charges. All structural parts are grounded.

THE NEW TESTERM DROP WIRE CONNECTOR for connecting subscriber drops to open wire. All metal parts are rust-proofed and the hood is one piece deep drawn Monel metal. The terminal is completely waterproof.



THE TYPE O SUB-STATION PROTECTOR is a single circuit protector with one pair of fuses and one pair of high potential True Gap discharges. It is built with white porcelain body, non-corrosive metal hood and a galvanized mounting bracket.

you get in change from a dollar bill after a light breakfast at the corner drugstore. As for pennies, the percentage sales taxes in many states seem to be about the only thing that keeps them from becoming extinct.

ICC Moves In On Local Transit

Judging by the way it was featured in a recent bulletin of the National Association of Railroad & Utilities Commissioners, the state regulatory commissions are pretty much alarmed over the recent U. S. Supreme Court decision in the Capital Transit case. In this decision, the highest court held 5 to 3, with Justice Douglas not participating, that the Interstate Commerce Commission (ICC) can fix combination fares for the transportation of passengers who transfer from local streetcars and buses in downtown Washington, D. C., to interstate buses which carry them to the Pentagon Building and other military establishments over on the Virginia side of the Potomac River.

It is an interesting and somewhat far-reaching decision which may some day be the subject of efforts to apply the principle of expanding federal jurisdiction in utility fields other than local transit; namely, telephone, natural gas, etc.

The majority of the court held that the ICC has the right to fix the fares and transfer arrangements for the through trip of those local Washington streetcar and bus passengers who make a daily transfer to the Virginia buses to carry them to and from their work in Virginia. It must be kept in mind that the local streetcar and bus company, the Capital Transit Co., has no physical plant or other facilities or routes in Virginia. Its operations, for the most part, are confined to the District of Columbia where it is subject to the District of Columbia Public Utilities Commission. The majority opinion is based on the so-called "stream of commerce" theory which considers the Capital Transit Co. intradistrict streetcar and bus transportation of passengers going to and from the Virginia establishments as an "integral part of an interstate movement."

What worries the state commissions, and may arise some day to plague some other utility industries, is the question: At what point can this theory be stopped? It would not be surprising to see the state commissions come up with a proposed bill at the next session of Congress to amend the Interstate Commerce Act so as to spell out some kind of a limitation on the ICC's apparent power, under this new decision, to step in and fix local streetcar rates.

The 10,000th telephone was installed in the Columbia exchange of the Missouri Telephone Co. on Nov. 10 in the farm home of Mr. and Mrs. Andrew Turner. Shown above are, standing, left to right, MR. TURNER and DAVE JOHNSON, telephone company installer; seated, left to right, C. W. GOTTRY, general manager of the telephone company, and MRS. TURNER.

The dissenting opinion (by Chief Justice Vinson and Justices Reed and Jackson) points out the extremes to which the "stream of commerce" theory can be carried in the following passage:

" . . . we think the stream of commerce theory inapplicable. We cannot agree that intrastate carriage of passengers who have an intention to continue their journey across state lines by way of another and wholly unconnected company makes the first carrier a company engaged in interstate commerce under the Motor Carrier Act as to that transportation.

"The court's decision may have unfortunate results. Its unlimited language sweeps into the hands of the commission [ICC] the regulation of all local transportation that carries a large proportion of passengers destined for or arriving from out-of-state points. For example, the court's ruling would seem to include the New York City commuter traffic moving by local bus, subway and streetcar service on its way to and from interstate buses."

Fortunately for the telephone industry, the Communications Act excludes the Federal Communications Commission (FCC) from exercising any jurisdiction over local exchange rates, in terms so unmistakable that it would be difficult to extend the "stream of commerce" theory to any attempt by the FCC to take over the fixing of local exchange rates, even where a particular message happened to cross a state boundary. The FCC did try something along this line several years ago in the case of the Kansas City exchange area consolidation, but the U. S. Circuit Court of Appeals held that the FCC has no control under the Communications Act.

Queering the Pitch?

The Communications Workers of America (CIO) is apparently highly displeased over the Bell System's liberalization of its employe pension plan before the union had a chance to demand the same. A communication issued out of the CWA headquarters in Washington on Nov. 21 threatened to seek a federal investigation of collective bargaining in the Bell System.

The union's complaint flared up in the wake of an announcement by the American Telephone & Telegraph Co. that pensions would be raised from a minimum of $50 to $100 a month. The new plan affects Bell System employes with 20 or more years of service at the age of 65. The Communications Workers of America is perturbed because the changes in the existing pen-

(Please turn to page 64)

Standard of magneto service

ACTUAL SIZE COMPLETE EXCEPT FOR BATTERIES

LEICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS & RELATED APPARATUS SINCE 1907

THE PLANT MAN'S *note book*

BY
RAY BLAIN
TECHNICAL
EDITOR

WE HAVE always doubted the necessity for a telephone answering device of any kind in this country, for we have been of the opinion that secretarial service, available in most towns and cities at a reasonable cost, has proved entirely adequate. Also, we have doubted that telephone users would be willing to pay even a nominal sum for the rental of such a device.

Therefore, we were "caught off base" recently when one manufacturer of telephone answering equipment advised us that after a write-up by the press just a few weeks ago he was flooded with thousands of requests from people all over the country inquiring as to when and how they could obtain this equipment. Many even sent checks to cover part payment with a view to expediting delivery. These checks were all returned to the senders.

In the event that the telephone answering device does come into general use, it is sincerely hoped that it will be owned, installed and maintained by the operating telephone companies responsible for the service.

• • •

It has been said: "Suspenders are just about the oldest form of social security."

• • •

An electric, flameless torch of new design has been recently placed on the market.

The manufacturer states that this "Thermal-Jet" flameless torch, which projects up to 1200 degrees F. of radiant heat from its orifice, can be used for practically all of the usual applications of a gasoline blow torch except for direct flame brazing or soldering. It is further stated that the absence of an open flame permits the use of this torch in many high heat applications where a flame or liquid fuel would be dangerous, prohibitive, or might ignite the material being worked on.

It would appear that this torch might provide an ideal arrangement for applying heat to drive moisture out of paper insulated telephone cable.

This heat gun, or torch, consists of a specially designed electric resistance embedded in ceramic, encased in a steel container with radiating, cooling fins. The container is securely mounted to a pistol grip wooden handle which, together with the fins, acts as a safety rest for the torch when not in use.

Its weight is approximately two pounds and it operates on 115 volts, AC, and consumes 400 watts. The torch can also be used for "burning" varnish, enamel, paint, etc., from wood, metal or canvas, without scorching or otherwise marring the surface. Actually, the radiant heat penetrates the pigment and quickly reduces it to an ash that is readily scraped off.

• • •

We do a lot of bragging about our superior telephone systems in the United States and while this is quite true there still remain a few annoying defects which undoubtedly could have been corrected had they received proper attention.

One such defect we might mention is the present-day party line service. It is very irritating to have someone lift a receiver frequently on another station while holding a conversation over a party line. It would seem that party line telephones could be equipped with a signal to indicate when the line is busy which would preclude this nuisance.

• • •

Washington, D. C. flying instructors tell their students: "There is only one thing you have to worry about in aviation these days. Make sure you get to and from the airport safely in your automobiles."

• • •

Unquestionably, there is an urgent present-day need for additional extension telephones in many exchanges in the Independent field. This assumption is based on the fact that telephones are now normally used more extensively in the average home than ever before. In addition, because of the critical shortage of telephones during the war years, new telephone customers at that time considered themselves fortunate in obtaining a main telephone, and extensions were not even considered. This resulted in a general shortage of residential extension telephones in many exchanges.

There are numerous advantages to be gained by the use of extension telephones in residences and these can be used as sales arguments by any operating telephone company that desires to increase its revenue from this type of service. The more important advantages to be stressed are: convenience, privacy and protection.

An upstairs extension proves a real convenience as considerable effort is required to run downstairs to answer a telephone every time it rings. This is especially true if you happen to be taking a bath at that particular time. The average family, occupying a two-story house, must of necessity spend much time upstairs.

The average housewife spends a great deal of her time in the kitchen and an extension in this location proves a really desirable household boon. It is here that she may perform her telephone household duties, such as ordering groceries and other supplies, with true efficiency and convenience.

Certainly extensions give privacy as they permit members of the family to carry on conversations without being overheard. This feature especially is enjoyed by teen-agers who are responsible for much of the great amount of present-day telephone traffic.

• • •

Someone has said that most of us are at the "metallic" age—gold in our teeth, silver in our hair . . . and lead in our pants!

• • •

While driving from Washington, D. C., to Chicago to attend the annual

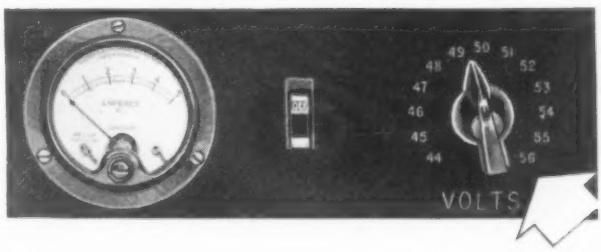
(Please turn to page 42)

3-Ampere Capacity
115-volt input—Cat. No. PA-82
230-volt input—Cat. No. PA-86

6-Ampere Capacity
115-volt input—Cat. No. PA-83
230-volt input—Cat. No. PA-87

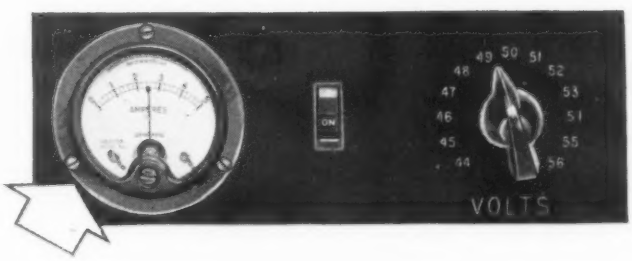
12-Ampere Capacity
115-volt input—Cat. No. PA-84
230-volt input—Cat. No. PA-88

Set pointer to the proper floating voltage (approximately 2.15 volts per cell), and operate the toggle switch to the "ON" position.



Output current automatically assumes the value necessary to meet load conditions and replace battery losses.

As the load increases or decreases the regulator unit correspondingly varies the output current. The output voltage is held constant.



convention of the USITA, the writer was forcibly impressed by the general trend toward the replacement of heavy open wire leads by cable, installed either aerially or underground.

The old four and five-crossarm leads of yesterday are rapidly being eliminated in many sections of the country. One and two-crossarm lines are being continued in service, although when a greater number of circuits are required, cable appears to be the answer.

It is our belief that this is a move in the right direction, since large open wires always prove difficult and expensive to maintain where sleet loading is heavy.

• • •

During the recapture of Manila from the Japs by MacArthur's forces, telephone manholes were effectively used as shelters and machine gun nests.

• • •

Over 500,000 hand and machine tools, valued from $1.00 to $50,000 each, are used in the Western Electric Co's. Hawthorne Works alone in the manufacture of Bell System apparatus and equipment.

PLANT MAN'S QUIZ

Q. Can you advise us whether it is possible to obtain lead covered telephone cables with the conductors insulated with plastic instead of paper?

A. Some cables of this type were manufactured in small sizes during the late war, but we doubt that they can be obtained at this time at a price which would be comparable to paper insulation.

We understand that there has been some difficulty in providing a plastic insulation of even thickness for conductors in a telephone cable so that necessary spacing will be provided between wires to insure proper transmission qualities. There is no doubt, however, but that at some future period a plastic insulated and lead covered cable of this type will be made available in all sizes. Some engineers also contend that a plastic jacket may even eventually replace the lead sheath entirely.

• • •

Q. Can you tell us what causes the starting relay in our Model "S" subcycle to chatter when ringing on a line equipped with repeating coils? Also, how can this difficulty be overcome?

A. This condition unquestionably is caused by an overload on the sub-cycle. This overload quite probably is caused in your case by ringing into low impedance repeating coils. Some of the older types of repeating coils were not designed to withstand full 90 volts ringing voltage without drawing an appreciable exciting current. Moreover, in the old days, the characteristics of ringing machines usually caused the output voltage to decrease rapidly with load. Therefore, in ringing into the repeating coil with this type of equipment, the trouble was usually not noticed because the voltage of the ringing generator decreased sufficiently to prevent saturation of the repeating coil.

The sub-cycle ringer utilizes a capacitor in series with the output in order to provide the required protection on overload. However, should the sub-cycle be connected to a low impedance repeating coil, the high exciting current of the repeating coil being pulled through the output capacitor tends to raise the ringing voltage at the terminals of the sub-cycle. If the repeating coil is saturated, this condition is aggravated and the current is increased through the repeating coil and the voltage rises on the output of the sub-cycle until the unit is overloaded.

There are three different methods by which this condition may be satisfactorily corrected. Perhaps, however, the best method is to replace the repeating coils with ones of new design capable of withstanding the full ringing voltage. The second method is to replace the C-1 capacitor in series with the output of the sub-cycle with a resistor of approximately 350 ohms. A similar characteristic may be obtained by short circuiting the C-1 capacitor and reducing the protective lamp at the switchboard to 25 watts or less. The third method is to equip the Model "S" subcycle with an additional protective coil known as the T-2668 saturable shunt choke that can be obtained from any telephone supply house which sells sub-cycle equipment. This choke coil is connected directly across the C-1 capacitor and limits the voltage rise on the capacitor and prevents overloading of the sub-cycle.

The trouble you have mentioned is not often encountered, but when it is, it may be overcome by following one of the three methods described above.

Q. What method is recommended for tamping earth refill in a trench when conduit is placed under streets so that pavement can be replaced immediately without danger of cracking because of earth settling?

A. The recently developed gasoline operated rammer that operates in a manner similar to a gasoline hammer is proving highly desirable for this purpose. This rammer is entirely self-contained. The ignition is supplied by a magneto which is tripped by the upper stroke of the operating handles.

This rammer operates on a modification of the rocket principle, jumping upwards from the thrust of the lower cylinder against the "foot" and dropping by its own weight. The rammer is operated by pushing down on the handles once for each jump. The speed of the operation is controlled by the operator, usually 50 to 60 jumps per minute. The weight is about 200 pounds and the height of jump is maintained at 13 to 14 ins. A slight tilt of the machine will "walk" the rammer in any direction desired.

• • •

Q. Will it be possible for us to form underground telephone conduit from concrete?

A. This plan was investigated several years ago at which time a flexible core was used to form the conduit opening in concrete which had been poured in the trench. This core was essentially a rubber hose that expanded under either air or water pressure to a predetermined diameter and at the same time was decreased in length.

Deflation of the core reversed the action, decreasing the diameter and increasing the length. This idea was finally abandoned because of its high cost and the fact that free lime in the concrete frequently caused corrosion to lead covered cable.

To date, no one has been able to devise any arrangement that proves as satisfactory as the approved type conduit which may be installed either with or without concrete.

Approved conduit also proves the most economical arrangement yet devised for the protection of underground telephone cables.

• • •

Q. What precautions may be taken to prevent sectional steel manhole forms from sticking to concrete?

A. When forms are removed from a manhole they should be well cleaned and greased. This action will usually permit forms to be removed easily and without damage to the concrete.

NORTH CAROLINIANS HOLD CONVENTION

THE North Carolina Independent Telephone Association held its annual convention on Oct. 27 and 28 at Pinehurst, which was presided over by President R. E. Kepler, Durham. Mr. Kepler opened the convention with his annual report on the activities of the association during the past year and he discussed the work of association committees having to do with rural telephone service, rural telephone loan and wage and hour legislation.

Clyde S. Bailey, Washington, D. C., executive vice president of the United States Independent Telephone Association, addressed the convention on the activities of the national association and reported on the latest developments concerning the REA rural telephone loan act, the new 75 cent minimum wage law, and other activities of Congress during its recent session.

He warned that telephone companies subject to the 75-cent minimum wage must move immediately to secure higher rates to cover the increased payroll cost brought about by the minimum wage rate.

Harry J. Huether, Jr., Lafayette, Ind., general commercial superintendent of the east central group of the General Telephone Corp., spoke on "The Telephone Is Here to Stay." He pointed to the decline of "held orders" for telephone service and emphasized that telephone companies are approaching a buyers' market and that they should expand the sources of revenue which are available, but which have not been explored because of the press of primary station development in the recent past.

Mr. Huether urged that special effort be made to gain more revenue through public paystations, extension telephones, directory advertising, and proper classification of service.

The work and organization of the Oak Ridge (Tenn.) Institute was described by A. D. Johnson, head of the information department of the institute.

The second day's session opened with the report of the association's Rural Service Committee by its chairman, E. W. Olschner, Tarboro, chief engineer, Carolina Telephone & Telegraph Co. The report stressed the progress made in the installation of rural telephones in North Carolina and the high costs of such installations.

Lloyd Griffin, Raleigh, N. C., executive vice president of the North Carolina Citizens Association, Inc., spoke on the subject of "Your State Tax Dollars." Mr. Griffin gave a history of the state tax structure, tracing it to the beginning of the financing of roads, schools, etc.

F. S. Gay, New York City, commercial staff engineer, American Telephone & Telegraph Co., addressed the convention on the subject of "Bell System Coordination with Independents."

Mr. Gay referred to the co-ordination section of the Bell System which is composed of men versed in different phases of the business. These groups have dealt with problems brought about after the war in connection with traffic work, operator toll dialing, and the production of more revenue.

L. D. Densmore, Lincoln, Neb., vice president, Central Telephone Co., gave a brief talk on "Observations on Today's Telephone Operations."

Mr. Densmore explained the provisions of the recently-enacted rural telephone loan act and brought out that the building of service lines would be the best way for farmers to secure service. He also mentioned that telephone companies could work out rates, maintenance charges, billing and compensation for tolls with various co-ops but that all of these should be on a sound operating basis.

He further stated that full cooperation should be given with various governmental agencies.

He also mentioned the new 75-cent minimum wage and that all exchanges having in excess of 750 stations would be affected. However, he pointed out that all other companies would be indirectly affected because of competition from other industries and the trend to higher living costs caused by general wage boosts. Since most companies have been operating with profits that are near or below a safe level, the money to pay the wage raises must come from subscriber rate increases, Mr. Densmore stated.

C. J. Logan, Tarboro, N. C., commercial engineer, Carolina Telephone & Telegraph Co., spoke on the subject, "Why Commercial Engineering?" Mr. Logan stated that the predicting of the future of telephone development or anything else was a difficult but important function. A fundamental plan should be worked out using a map of the town, construction of new central office buildings, conduit layouts, size and type of switchboard, and provision of space for such new developments as inter-toll dialing, etc., he said. Feeder cables of sufficient sizes, the expected growth in main and party line stations, adequate service in the rapidly grow-

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Officers and directors of the North Carolina association. SEATED, left to right: R. E. McKELVEY, Franklin, vice president; MRS. J. D. MORRIS, Roxboro; E. O. FREEMAN, Aberdeen, president; R. E. KEPLER, Durham, and J. L. RUNKLE, Asheboro, vice president. STANDING, left to right: E. C. HEINS, Jr., Sanford; W. C. HARRIS, Lexington; JOHN CLINE, Southern Pines; J. H. SNIDER, Denton; FRANK LaPRADE, Martinsville, Va.; W. S. BENNINGFIELD, Mt. Airy; J. E. BLADES, Elizabeth City; RALPH VAN TRINE, Durham, and ROBBINS TILDEN, High Point.

WITH HIS HANDS FULL OF SERVICE

The only thing the telephone industry has to sell is service. Telephone people try to make that service as good as possible. Then they try to deliver it as *courteously* as possible.

The advertisement on the opposite page tells this story in terms of a man who represents thousands of telephone men and women all over the country. Appearing in national magazines in December, it describes a telephone tradition we're all proud to uphold.

An advertisement of the

BELL TELEPHONE SYSTEM

HE BRINGS AN ARMFUL OF COURTESY, TOO

The man who comes to install or repair your telephone brings something more to your home than equipment, tools and efficiency.

He brings courtesy and consideration and a genuine desire to please. He treats your home and the things in it as carefully as though they were his own—cleans up and puts everything back in place when he's finished.

He brings along the realization that he is the representative of thousands of telephone men and women you may never see—all working together to give you friendly, constantly improving telephone service at reasonable cost.

BELL TELEPHONE SYSTEM

ing areas of the town and also a likely larger demand for service in other areas should be considered in any commercial study into the future, Mr. Logan said. Other factors to be considered would be to carefully examine the "held orders," what amount of toll business should be provided for, population history and general characteristics of the town, interviews with leading citizens, real estate men, bankers, and the chamber of commerce whose knowledge and interpretations of local conditions may be helpful in providing a well-rounded and complete understanding of the situation, he concluded.

Alvin Wingfield, Raleigh, spoke on the subject, "Some Things You Should Know About the Soviet Union." The speaker served on the staff of Gen. Lucius D. Clay in Germany and his last position was that of administrative officer of the Liaison and Provost Section, which was the section that handled the Army's dealings with the Soviet. The speaker spoke of "Freedom of the People" under the different types of governments, government regulation of business by Russia, and how the Soviets were attempting to outproduce the United States.

The speaker advocated continued and active preparedness for defense. That is the only insurance we have in watching the Russians fulfill their estimated date of 1961 as the time they will be prepared to tackle the world with arms, Mr. Wingfield stated.

Arthur Jones, Charlotte, N. C., vice president of the American Trust Co., spoke on "Your Public Relations—A Customer's Viewpoint."

The convention elected the following directors: Mrs. J. D. Morris, Roxboro; E. C. Heins, Jr., Sanford; W. C. Harris, Jr., Lexington; John Cline, Southern Pines, and J. H. Snider, Denton.

The directors elected the following officers: President, E. O. Freeman, Aberdeen; vice presidents, Louis Runkle, Asheboro; Tom Tilden, High Point, and R. E. McKelvey, Franklin, and secretary-treasurer, J. E. Havens, Tarboro.

V V

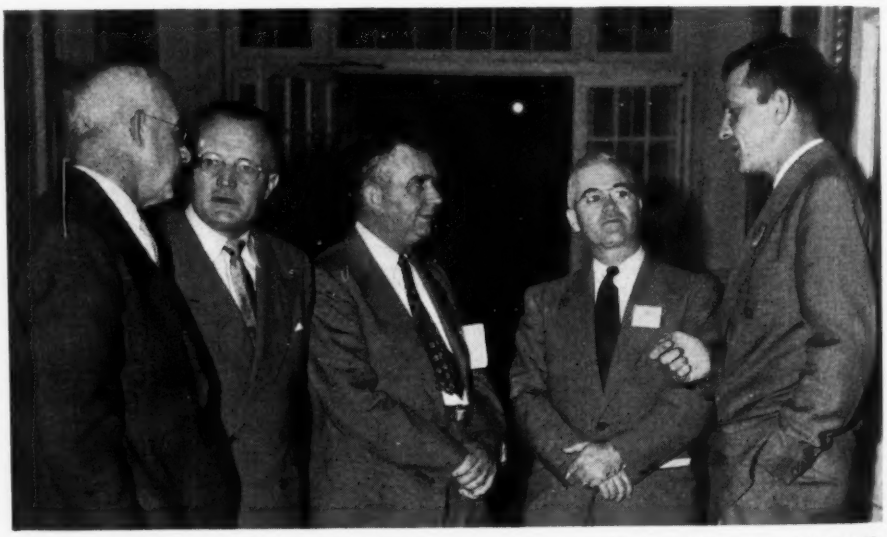
Sailors Can Now Telephone To Their Girls in Port

Signed on for duty afloat, the telephone now goes to sea with the U. S. Navy as well as with civilian seafarers, making it possible for sailors to make calls from the high seas to shore telephones by means of the Bell System's regular radio-telephone ship-to-shore service.

Destroyers and the larger Navy craft now have the same service used by passenger liners and merchantmen at sea.

Sailors can call back home from nearly any point in the world. But, there is a hitch, the girls can't call their wandering boys because the service is provided only one way and calls from shore to ship are prohibited.

Three newly-elected officers of the North Carolina association. They are, left to right: R. E. McKELVEY, Franklin, vice president; E. O. FREEMAN, Aberdeen, president, and J. L. RUNKLE, Asheboro, vice president.



In this group photographed at the North Carolina convention are, left to right: E. W. OLSCHNER, Tarboro; JOHN CLINE, Southern Pines; E. O. FREEMAN, Aberdeen; E. C. EWER, Rocky Mount, and TOM MOORE, Spartanburg.

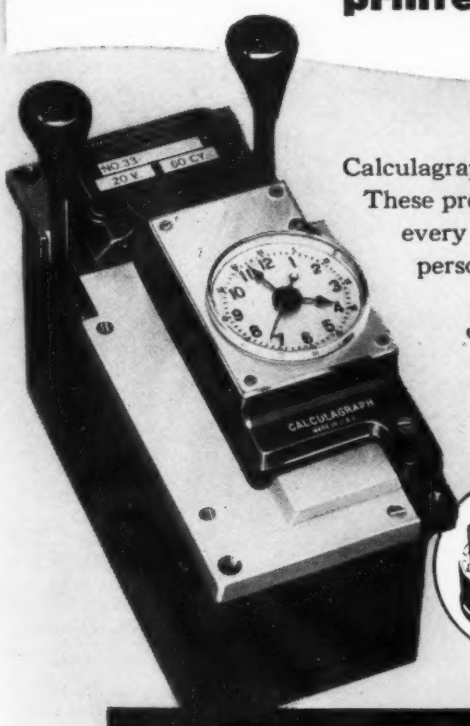
Grouped around a banquet table at the North Carolina convention are, left to right: DAVE BRADDOCK, Bristol, Tenn.; L. D. DENSMORE, Lincoln, Neb.; J. E. BLADES, Elizabeth City; FRANK S. BARNES, Rock Hill, S. C.; CLYDE S. BAILEY, Washington, D. C.; MRS. FRANK S. BARNES, and RALPH VAN TRINE, Durham.

>> The 35-mile telephone cable that ran from Munich to Hitler's mountain hideaway, Berchtesgaden, is being dug up for use out of Bonn, West Germany's new capital.

If your toll call revenues depend on PENCIL work!

CALCULAGRAPH

is one sure way to collect all the revenue due with accurate, automatically calculated, printed toll time records



Calculagraph printed elapsed time records are accurate to the second. These precise printed records assure collection of all the revenue due every toll call. Automatically computed, they relieve switchboard personnel of time-consuming detail work that slows switchboard service. Calculagraph is the engineered, revenue-vital equipment that no exchange—large or small—can afford to overlook. Available for switchboard or portable mounting, they are fully described in four illustrated catalogs. Write for yours, now, on company letterhead.

COMPLETELY ACCURATE TO THE SECOND
AUTOMATICALLY COMPUTES ELAPSED TIME
PRINTS THE RECORD FOR PERMANENT FILING
FACILITATES SWITCHBOARD SERVICE
OPERATES SILENTLY

CALCULAGRAPH COMPANY · INC

HARRISON • NEW JERSEY

THE STANDARD FOR ACCURACY SINCE 1892

telephony's *SAFETY* bulletins

No. 17—Plan for Safety. Safety is no accident. Any telephone job can be made a safe job if a little time is taken to plan for safety.

by FRANK E. LEE

SAFETY on the job doesn't "happen" any more than an accident "happens." Accidents are *caused* when accident hazards are disregarded, or when adequate safety precautions are not taken. Safety on the job occurs when plans are made and followed to do the job safely.

Planning for safety should be constructive, and not of the "wishful thinking" variety. Planning for safety can be accomplished in a number of ways. Basically, planning for safety means thinking through a particular job and noting the spots where a hazard may be encountered. As the hazards come to mind, known safe practices and precautions that apply also should be considered.

Where a crew of men is going to do a job, a group discussion on the safety aspects is in order. In this manner the thoughts and ideas of a number of people will be brought to bear on the subject. The many safety ideas that will be brought to light by these talks will make valuable additions to any job. Men who are new on the job will gain a wealth of safety knowledge by listening and talking to more experienced men. With younger men especially, these few moments spent in discussing safe practices will serve to tie in the safety creed with their every-day job.

Some jobs are more or less routine, and the planning part may take place while tools and material are being assembled. Other jobs may fall into the category of big or unusual jobs. On these jobs, the safety planning must be exacting and thorough. Typical questions to be asked and answered are:

(1) How many men will be required?
(2) What equipment and tools will be needed?
(3) Are there any unusual hazards?
(4) What safe practices are involved?
(5) When is the best time to do the job?
(6) Have all the men had safety training for this particular type of job?
(7) Who will coach the new man or men to help them work safely?

The above list of questions should be expanded until all foreseeable possibilities have been exhausted. For one group, this kind of careful planning may be completed in a few minutes; in another group, a longer discussion, plus a session of on-the-job-training may be the answer.

Next the job should be laid out and programmed in order that the completed work will satisfy the mechanical and engineering requirements. After the job is laid out, the plan should be reviewed and co-ordinated with the safety aspects that may be involved.

Now, with the groundwork carefully laid, the job can proceed in a safe and orderly fashion. While the assignment is in progress, certain checking points can be observed to be sure that the overall plan is being followed. These checks also will care for any details that may not have been covered in previous discussion.

Dynamic planning for safety should encourage the observance of safe practices on every job. Each job should be approached with the compelling feeling that safety is a living and important part of that job. Take pride in safety consciousness. Let your actions and your attitude towards

safety inspire those around you. In this way safety will become a living part of every telephone job.

To carry out all the precautions involved in doing a job safely is going to take a little time. Whether or not this expenditure of time is worthwhile will depend upon the answer to this question. Can you afford to spend a little time to do the job safely, or can you afford to risk the chance of being injured or killed by disregarding safety precautions?

• • •

There is enough work on hand for every business now in existence, and for industries yet unborn, to keep busy for generations to come. Twenty-seven million Americans have no kitchen sinks; 18,000,000 Americans lack washing machines; 25,000,000 Americans lack vacuum cleaners; 1,000,000 American families need new homes this year; 40,000,000 Americans have neither bathtub nor shower.—*Charles Luckman, President, Lever Brothers Co.*

For Telephone Troubleshooting . . .

GITS
"UNBREAKABLE" PLASTIC
FLASHLIGHTS

No. 100 "Plastic Eye" Flashlight. PRE-FOCUSED.

- 4 STYLES—One For Every Application!
- "UNBREAKABLE" PLASTIC PARTS—Shockproof!
- ALL BRASS CONTACT PARTS—Dependable!
- ECONOMICAL—Longer, Useful Service!

No. 122 "Super Right Angle" Flashlight. PRE-FOCUSED. Extra Bulb and Belt Clip.

No. 125 "Super Right Angle" Flashlight. DIFFUSED. Extra Bulb and Belt Clip.

To thousands of telephone maintenance men, GITS "UNBREAKABLE" PLASTIC (ETHYL CELLULOSE) FLASHLIGHTS have a reputation for years of rigorous, dependable service. Regardless of the weather or whether it's inside or outside, these flashlights **stand up on the job!** They won't rust or corrode. GITS FLASHLIGHTS are a "must" for performance and economy. Send for samples and prices on your letterhead — or consult your distributor.

No. 126 EXT. COMBINATION "Super Right Angle" Flashlight (PRE-FOCUSED) with Clamp-On Extension (DIFFUSED). Extra Bulb and Belt Clip. Used With or Without Extension.

Ask your Distributor or Write Direct

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SURFACE ANCHORS AND ADHESIVES

Use Miracle Surface Anchors Bonded with Miracle Adhesives to support wires, cables and light weight pipes to masonry, steel or any rigid surface—Quickly and Permanently—Mechanical anchorage no longer necessary!

Check these advantages of Miracle "CONSTRUCTION by ADHESION!"

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- √ Goggles Not Needed
- √ No Electric Cords or Attachments
- √ Less Fatigue to Workman
- √ No Noise
- √ No Inconvenience to Occupants
- √ Saves Labor and Tool Expense

FREE: Interesting, colorful brochure on "miracle surface anchors"! Write for your copy today.

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For anchors write
DEVICES, INC.
214 E. 53rd St., New York 22

Longer Spans
350 FT.
150 FT.
Fewer Breaks
Lower Installation and Maintenance Costs
Better Transmission at Voice Frequency
. . . You get all these advantages with Amertel wire

SPANS OF 350 to 500 feet in length are possible with U·S·S Amertel-135 Wire. This means that in light loading areas approximately eleven poles can easily handle a line one mile long . . . only sixteen poles per mile are required in heavy loading areas. But with Standard B.B. wire, span lengths are limited to 150 feet in heavy loading areas, and 36 poles are necessary to handle a mile long line. *You save up to 20 poles per mile with Amertel!*

In addition to the savings in poles, Amertel effects great savings in accessory materials, in labor, and in installation and maintenance time. Amertel is long-lasting, too. It is hot-dip galvanized for maximum protection against corrosion. It has great resistance to vibration stresses . . . will stand up under heavy wind and ice loads.

Write for complete information on Amertel Wire and on our regular grades "B.B.," "E.B.B." and "Steel".

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Look for this tag.
It is your assurance of highest quality wire.

USS **AMERTEL**
TELEPHONE & TELEGRAPH WIRE
UNITED STATES STEEL

MAINTENANCE TESTING EQUIPMENT

By JOHN A. BRACKEN

THE operation of testing equipment requires an adequate power supply and this power is furnished almost exclusively by dry cells. The dry cell is not really dry, but only relatively dry as compared with other kinds of battery cells containing a liquid electrolyte.

In the commercial type of dry cell, the anode (negative pole) is a containing cylinder of zinc which, in addition to holding the active materials of the cell, is itself a vital element in producing the electric current. The cathode (positive pole) is a carbon rod held in a porous mix of absorbent active material, packed into the cell between the electrolyte paste layer and carbon. However, all dry cells are not identical. If a large current is required for certain work, one kind of "mix" is used. If long life and low current drain are involved, as in the operation of testing equipment, another kind of "mix" is required.

The EMF generated in a dry cell is due to the action of the electrolyte upon the zinc anode. The greater the difference in intensity of the electrolyte action in the cell, the greater the difference of EMF, and likewise the greater the value of the current output.

Perhaps a clearer idea of the EMF of a dry cell may be obtained from the following statement: The amount of chemical action which occurs in the cell is proportional to "I" times "t," where "I" is the current value and "t" is the time during which the current flows. The current flowing in a circuit merely represents the value of the flow, and is quite irrespective of time. To obtain the amount of electric current that has passed through a circuit, the current value must be multiplied by the time in seconds during which it is flowing. Furthermore, the electrical energy produced by the chemical action is proportional to the amount of chemical action and can be expressed as "e I t," where "e" indicates the EMF and is constant for a given type of dry cell.

The energy delivered by a dry cell battery to the testing equipment circuit indicates work. The flow of an electric current represents work accomplished.

PART XXV. The preceding article in this series appeared in the Sept. 24 issue, p. 42.

The unit of work is the joule, which is defined as the work done in one second when a current of one ampere flows in a conductor between two points having an EMF of one volt.

Example: A test circuit having a total resistance of 500 ohms is connected to a dry cell battery of 22.5 volts. What is the amount of work accomplished in the circuit if it is in use for 10 minutes? $I = E \div R$ or $22.5 \div 500 = 0.045$ amperes. The amount of work equals "e I t" or $22.5 \times .045 = 1.0125 \times 10 \times 60 = 607.5$ joules.

If all the energy of the chemical action of the dry cell battery were available for maintaining the current then "eIt," the energy used to maintain the current would be equal to $R I^2 t$, the energy which appears in the test circuit, that is, "e I t" equals $R I^2 t$ or $500 \times .045 \times .045 \times 10 \times 60 = 607.5$ joules.

The EMF of a dry cell battery is entirely independent of the size of the cells, and depends entirely on the characteristics of the chemical action in the cell. However, when the dry cell is in action, the carbon cathode becomes

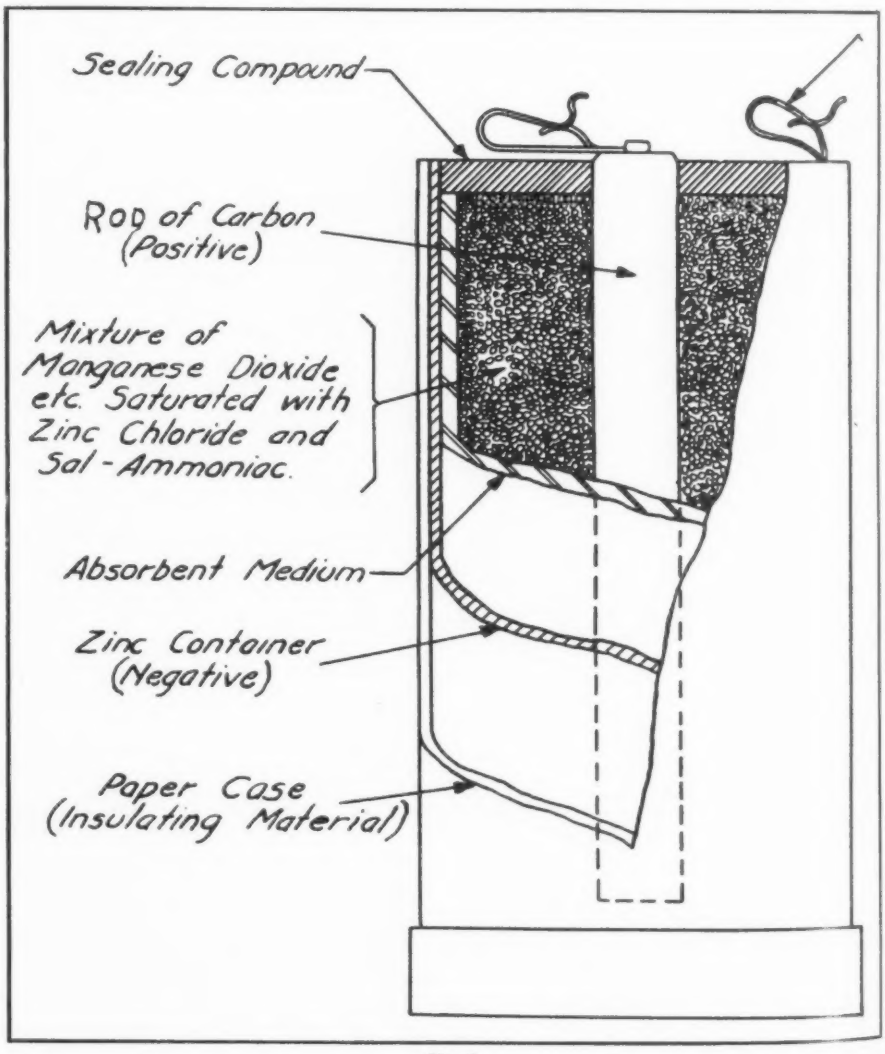
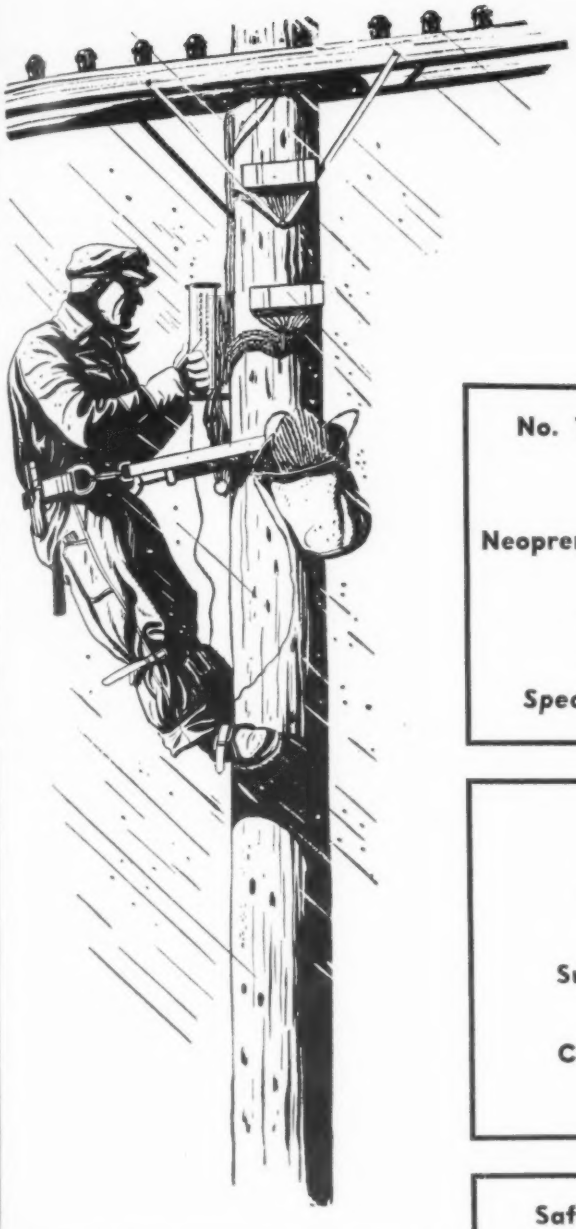

Sealing Compound
Rod of Carbon (Positive)
Mixture of Manganese Dioxide etc. Saturated with Zinc Chloride and Sal-Ammoniac.
Absorbent Medium
Zinc Container (Negative)
Paper Case (Insulating Material)

Fig. 1



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Construction Supplies

(Available Promptly)

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Neoprene and Weatherproof drop wire	Oak Pole Brackets
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Special Prices — Write	Drop Wire Clamps
	SnubR Grips
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Suspension Clamps	Galvanized Nails
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"Like New" ..1600 ohm..$22.00
2500 ohm.. 22.50

Kellogg Desk Stand..... 5.00

Western Electric Desk Stand. 6.00

Ringer boxes, small new oak cabinet, Alnico generator, induction coil and ringer.

"Like New" ..1600 ohm..$13.20
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NEW STOCK

Leich No. 901 wall and desk telephone
1600 ohm..$29.35
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1600 ohm..$31.00
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TELEPHONE REPAIR & SUPPLY COMPANY

1760 Lunt Avenue **Chicago 26, Illinois**

coated with hydrogen atoms, which are poor conductors of electricity. The cell finally becomes polarized, and the current output of the cell decreases to zero. In order to minimize this condition a depolarizing mix containing oxygen bearing manganese dioxide, is packed into the cell between the electrolyte paste layer and carbon rod.

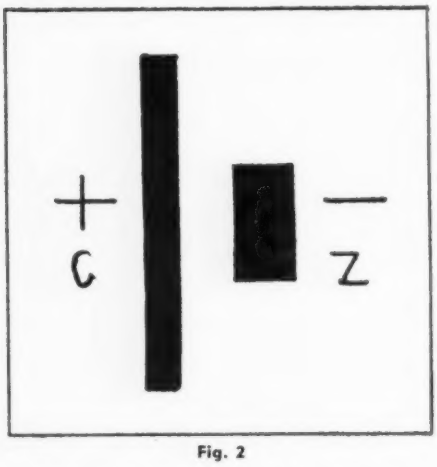


Fig. 2

Oxygen atoms released by the manganese dioxide, combine with the hydrogen atoms. The combination of these two gases produces water; the cell is then depolarized and continues to generate current.

The following factors are listed as significant in determining the type of dry battery to be used in testing equipment circuits:

(1) It should possess the proper EMF and capability of operating a reasonable length of time without great falling off in EMF, that is, its EMF should be constant.

(2) Current drain to which the battery is subjected. It should give a constant current output and not be liable to rapid exhaustion. For this reason, it is important that dry cell batteries should possess great recuperative power, that is, the power of quickly regaining their rated output.

(3) The range of operating EMF, including both minimum and maximum permissible EMF, should be satisfactory.

(4) Low internal resistance.

(5) Temperature at which the battery is to operate.

(6) Free as possible from local action, that is, while the external circuit to the battery is open, there may not be waste of active material within the cells.

(7) It should not be affected to a very large degree by polarization.

(8) During periods of idleness, the battery should regain its strength so that at the beginning of the next period of use its EMF is normal.

(9) The battery should be made of durable materials to promote dependability.

TYPE CELL	ELECTRODES		ELECTROLYTE	OPEN CIRCUIT E.M.F.	CLASS OF SERVICE
	Carbon	Zinc			
Dry	Positive +	Negative —	Sal-Ammoniac	1.5 Volts	For any intermittent work such as flash lights, buzzers, local battery telephones, test desks, ohm meters, wheatstone bridge and similar service.

Chart 1

A cross sectional view of a dry cell is shown in *Fig. 1.* A conventional symbol to indicate a dry cell on drawings is shown in *Fig. 2.* The long thin line represents the carbon element and is the positive pole usually indicated by the "+" sign or by the letter "C". The short thick line is the zinc element and is the negative pole and indicated by the "—" sign or by the letter "Z".

Chart I is a detailed outline of a dry cell's many features. *(To be continued)*

Why Stockholders?

What would be your reaction to these help wanted advertisements if they appeared in the daily newspapers?

WANTED—Telephone operator. Good wages and working conditions. Bring your own switchboard. Employment Office, Telephone Company.

WANTED—Men experienced in telephone field work who can furnish own truck. Good pay—steady work. Truck must be fully equipped.

WANTED—Engineer to develop radio relay transmission. Must supply own repeater and other equipment.

Well, the chances are these advertisements would go unanswered. In the first place such ads are not likely to appear in the papers. But if they did what operator could afford to furnish a switchboard . . . what lineman would be able to completely outfit a truck for field use . . . what engineer could supply all the equipment necessary for radio development??

These items cost more than any of us can afford, yet we need to have the boards, the trucks, buildings and all the other material to carry on our business . . . to earn our living.

Money is needed to purchase this equipment—how do we get it?

Here is your answer to the lead question. The stockholders, people from all walks of life, who have faith in the Company and its operation, are willing to stake their savings in extending our business.

It is not one, or a few, but many such stockholders are required to buy the tools for our jobs—the tools we couldn't afford to buy for ourselves.

So you see, the stockholders are a part of our telephone team. They supply the capital for the tools, we use them to provide telephone service to the public, and the stockholders receive a fair return for the money invested.

The above circular, emphasizing the vital part stockholders play in supplying capital with which to buy equipment, supplies and tools, recently was distributed by a telephone company. It was based on a similar article appearing in the ARM-CO-OPERATOR, American Rolling Mill Co. magazine, which received national recognition.

McKenzie Resigns from General Group; Jones Appointed

Carl H. McKenzie, Erie, Pa., resigned as president and director of Pennsylvania Telephone Corp. at a meeting of the board of directors of that company held on Nov. 23.

C. E. JONES

At the same time he resigned as president and director of the other five companies of the eastern group of the General Telephone System, namely, Central Vermont Telephone Corp., Delaware Valley Telephone Co., Ohio Associated Telephone Co., Tri-State Associated Telephone Corp., and Upstate Telephone Corp. of New York.

C. E. Jones, vice president of Pennsylvania Telephone Corp., will be the senior executive of that company and acting eastern group manager pending the selection of a successor to Mr. McKenzie.

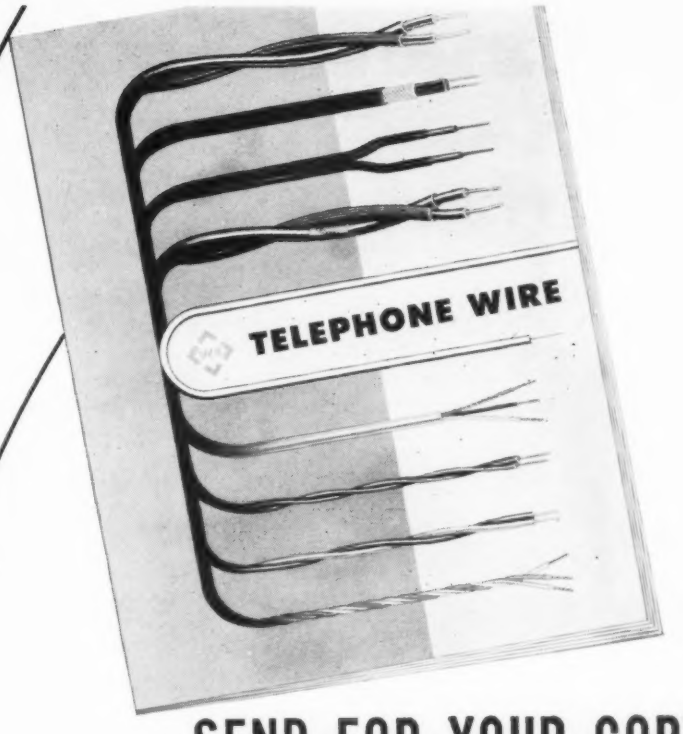
V V

The Michigan Bell Telephone Co. publication reports the incident of an irate guest who flashed the switchboard at the Willard Hotel in Washington, D. C. Obviously annoyed, he complained that on his long distance call to New York his party had just hung up on him.

The chief operator was sympathetic and cooperative. She would try to reestablish the connection. Now if the guest would be good enough to explain the circumstances . . .

"All I said was, 'This is Friday, in Washington,' and the man on the other end said, 'It's Friday in New York, too', and hung up."

Apparently using a different approach on his second try, Mr. Friday reached his party and completed his conversation.



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SEND FOR YOUR COPY OF THIS INFORMATIVE BULLETIN TODAY

Full of interesting information for telephone men on

DROP WIRE CONDUCTORS
DROP WIRE CONDUCTOR COATINGS
DROP WIRE ADHESION
DROP WIRE INSULATION
OUTER COVERINGS FOR DROP WIRE
THE STORY OF TELEPRENE
THE STORY OF TELESEAL

MAIL THIS COUPON TODAY

THE WHITNEY BLAKE CO., BOX K, HAMDEN, CONN.

Gentlemen: Please send me a copy of your new Telephone Wire Bulletin.

Company_____

Address_____

City_____ State_____

Signature_____

Title_____

THE WHITNEY BLAKE CO.

WB WELL BUILT WIRES SINCE 1899

Distributed by Graybar

BOX K, HAMDEN, CONNECTICUT

TRAILER USED AS OFFICE BY DIRECTORY COMPANY

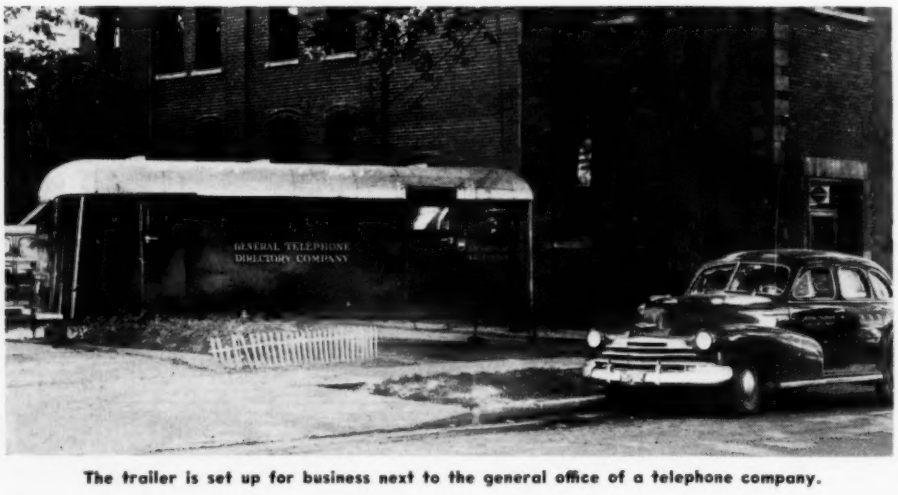
THE remarkable growth of many telephone companies during the past few years has resulted in cramped working conditions in many central offices. Often this has meant unsatisfactory working quarters for the once-a-year visit of the directory advertising salesmen, who, of necessity, need desk and telephone facilities.

Faced with this situation in a number of the exchanges served in the midwest, the General Telephone Directory Co. purchased a 26-ft. trailer in 1948 and outfitted it as a portable office. Specially built cabinets, desks and closets provide all the space needed for a seven-man unit, including a private office for the supervisor.

The trailer is so wired that each desk space has adequate light and telephone facilities; five 40-in. and seven 20-in. fluorescent wall strip lights, with adjustable shades, are connected to an outside plug. Four telephones are also

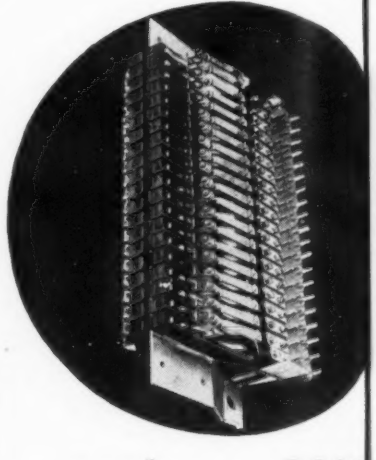
View of general trailer sales office equipped for seven-man unit.

Private office for sales supervisor.



The trailer is set up for business next to the general office of a telephone company.

STRON



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central office protect

Combines cable termination with pro
of central office personnel and equ
against high potentials and sneak cu
In operation, it opens the switchboard
grounds the outside line, and opera
alarm circuit. Note these construction a
erating features:

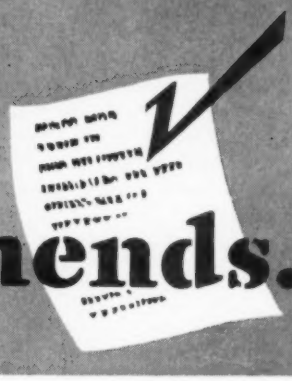
1. Provides for temporary disconnect
2. Self-soldering, low-resistance heat
easily reset after operation wit
changing, reversing or re-solde
coils.
3. Line and switchboard connection
opposite sides of protectors.
4. Steel mounting plate for maxi
strength.
5. Unit dischargers, consisting of
carbons, separated by acetate di
tric cemented together, permane
grounds the outside line under
tinuous discharge.
6. Easily tested without removing
coil; withdrawal of test plug le
protector in operating condition.

STROMBER

STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS

ERG-CARLSON recommends...

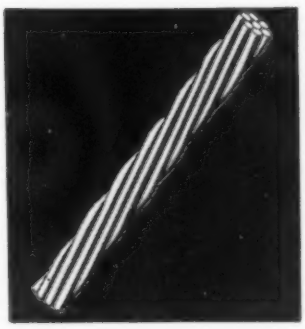


crapo

guy and messenger galvanized strand

The superior tensile properties inherent in steel are used to full advantage in *Crapo* Galvanized Strand. The tightly adherent zinc coating applied by the *Crapo* Galvanizing Process provides lasting protection against corrosion, and prolongs the life of the strand. Controlled ductility makes *Crapo* Strand easy to work and to serve. Low first cost and low yearly cost result in important economies for operating companies.

The all-round dependability of *Crapo* Galvanized Steel Strand is being demonstrated constantly by its outstanding performance in service. There is a size and grade for all practical needs.



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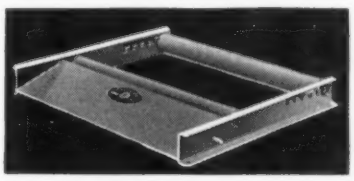
speed *reel-handling with* roll-a-reel

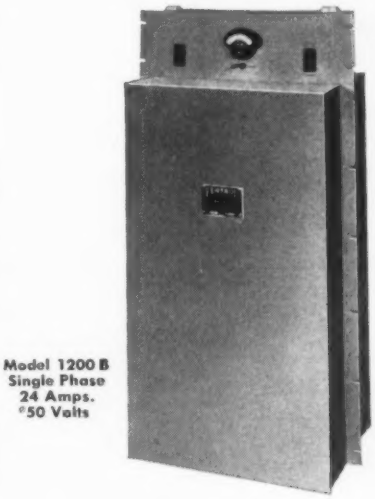
Handling heavy reels of wire, cable, steel strand or rope becomes amazingly easy, economical, and safe with Roll-A-Reel. This essential device saves time and money, both in the warehouse and on the job. Sturdy and simple, with "Tip-Toe" operation, it makes unloading or loading reels as easy as handling a spool of thread.

- Heavy gauge steel frame, capacity up to 2,000 lbs.
- Light-weight and portable; strong ball-bearing rollers.
- Low, slanted front for easy loading and unloading, eliminating use of jacks or other troublesome devices.
- Simple, positive roller lock makes reel removal easy.
- Width 30", depth 28", height 3½", weight 50 lbs.
- Stands upright in any end position for safety, convenience.
- Rear roller can be adjusted immediately for any reel size.
- Built for years of trouble-free service.



STYLE A—FOR REELS UP TO 28" WIDE

Also available in Style B for 2 reels 24" wide, or one reel 48" wide. Capacity 4,000 lbs.



Model 1200 B
Single Phase
24 Amps.
*50 Volts

flotrol

automatic battery chargers

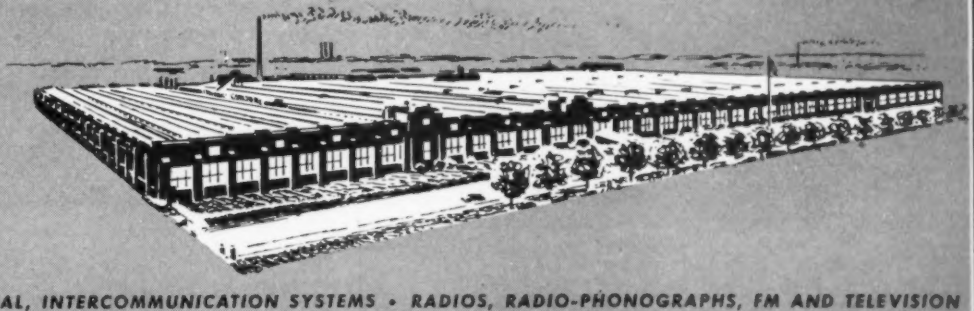
SUPERIOR IN 5 WAYS:

1. **ECONOMY:** Experience has proven FLOTROL can save on power costs up to 20% per year.
2. **DEPENDABILITY:** Mechanical failures are cut to next-to-nothing because FLOTROL has no moving parts.
3. **RESPONSE:** FLOTROL answers load needs *instantly*—keeps battery fully charged at all times.
4. **LIFE-SAVING:** FLOTROL works while your battery rests—gives any battery longer life.
5. **SAFETY:** Automatically limits current to safe value on overloads.

FREE! Write for Bulletin 137, a complete catalog of FLOTROL, its technique, and its models.

ERCARLSON

Factory, General Offices: Rochester 3, N.Y.
Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto



PMENT AND ELECTRONIC CARILLONS • INDUSTRIAL, INTERCOMMUNICATION SYSTEMS • RADIOS, RADIO-PHONOGRAPHS, FM AND TELEVISION

on an outside connection so that after arrangements have been made for the placement of the trailer, outside electric and telephone connections can easily be made. Heat is provided by three portable forced air electric heaters.

As shown in the accompanying photographs, each sales representative has his own chair, desk with three drawers and two overhead cabinets for storage space. Ample space is also available for office supplies, clothes closet, bulletin board, spare tire and fire extinguisher.

One of the standard Chevrolet sedans used in daily sales work was equipped to transport the trailer from one city to another. Overload rear springs, hitch and electric brakes were installed on the car, and these have proven satisfactory. The only preparation required prior to moving to a new location is the severance of utility connections, anchoring the chairs and pulling up the two side door steps.

Locations near the down-town area have proven to be the most satisfactory, and usually adequate space adjacent to the telephone company central office is available. Other locations have been filling stations, parking lots and street parking meter spaces. Landing jacks at each corner are used to level the trailer.

Inside view of a cabinet in General Directory's trailer-office.

Large gold leaf "General Telephone Directory Co." decals are placed on each side and show up plainly on the dark green paint; the roof is painted silver.

This portable office trailer has been in use for over a year, and outside of the disadvantage of planning satisfactory locations, which have not proven too great, some of the advantages have been:

(1) Adequate space and superior working arrangements are provided the sales unit.
(2) Permanent housing for all sales material, with no need to pack and unpack before and after a sales canvass.
(3) Plenty of fluorescent lighting makes for neater work.
(4) Telephone facilities available for each salesman.
(5) Personal contacts in the trailer with advertisers is conducive to better interviews, since additional source material is available.
(6) A morale-builder for the unit members. More frequent sales meetings and informal discussions.
(7) Salesmen, telephone personnel and townspeople generally have all praised the trailer as progressive, modern and a "splendid idea."
(8) A central location where the telephone office will know it can locate salesmen.

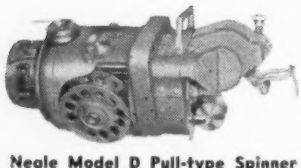
Usually, it has been possible to start sales operations within an hour after the trailer has reached the new location, and this in itself is a most important time-saving factor. The salesmen have only to sit down at their desk, open their drawers and go to work.

V V

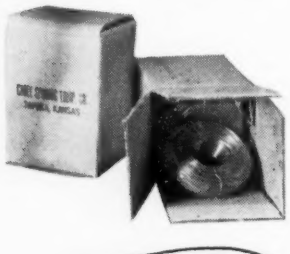
>> The equipment, land, lines and buildings needed to furnish long distance service to the nation's telephone users have cost 820 million dollars or more than four dollars for every man, woman and child on the North American continent.

Neale Model B Cable Spinner may be operated by one man. Works from ground or strand—makes cable spinning easier, faster, more economical.

Speed Construction and Maintenance



Neale Model D Pull-type Spinner Gives you top efficiency.



Independent telephone companies from Coast to Coast report that cable spinning saves time and cuts costs in erecting and maintaining outside plant.

Like them, you'll find cable spinning fast, practical and economical when your crews are equipped with Cable Spinning Equipment Company tools precision engineered for the job. There's a complete line to choose from.

For BEST Results Use NEALE Wire
Available in 7 different types and sizes, Neale Spinning Wire meets the toughest construction and corrosion conditions.

Phone Your Jobber Today!
Learn How Cable Spinning Equipment Company tools can save you money.

CABLE SPINNING EQUIPMENT CO.
TOPEKA, KANSAS Phone 3-1829

COURTS AND COMMISSIONS

Michigan Bell Wins Case On Directory Cover Advertising

The Michigan Bell Telephone Co. Nov. 16 won a permanent injunction against another company covering its directories with advertising jackets. A temporary injunction had been granted May 2.

Circuit Court Judge George B. Hartrick's opinion stated that Francis O. Wharram and Harvey J. Hunyady, partners in the firm of the Sanitary Cover Co., were violating the tariffs under which the Bell company operates.

"The defendants have engaged in manufacturing and distributing false covers in several Michigan cities. These covers slip over the regular covers of the Bell company's directories.

"The false covers display advertising of local subscribers which is obtained by solicitation in competition with the plaintiff," the opinion continued. "Information of value to the efficiency of the telephone service will be useless if hidden by defendants' false covers.

"The courts presently take the position that the sale or distribution of something to be used in connection with plaintiff's property comes under the classification of unfair competition."

V V

SW Bell Gets Higher Rates In Hallettsville, Tex.

The city council of Hallettsville, Tex., has approved the Southwestern Bell Telephone Co.'s rate application. There is no state regulatory commission in Texas.

The new schedule, effective after Jan. 1, 1950, fixes monthly business rates at $5.50, extensions, $1.25; one-party residence, $2.75; two-party residence, $2.25; residence extensions, 75 cents. Present rates for business are $3.50; two-party residence, $2.00; and extensions, 50 cents.

V V

Authorizes Oregon Company to Borrow $65,000 From RFC

The Tri-County Telephone Co., De Lake, has received authorization from the Oregon Public Utilities Commissioner to borrow from the Reconstruction Finance Corp. $65,000, to be repayable in monthly payments of $655 each, inclusive of interest, and as security therefor, to issue its promissory note bearing interest at the rate of 4 per cent per annum secured by a mortgage on all of its real and personal property, the final maturity of such note to be on or before 10 years from the date of the note.

Proceeds from the loan are to be used to (1) pay and retire a temporary loan from the Commercial Bank of Tillamook, Ore.; (2) open accounts payable incurred in connection with the installation of the dial system at De Lake, approximating $36,156.51; (3) construct a building and install an automatic dial system at Cloverdale, estimated at $11,500; (4) use the balance of said funds to reimburse in part its treasury for moneys expended therefrom for additions and improvements to its property and for working capital.

V V

Nebraska Commission Approves Rate Raise for Burton Company

The Nebraska Railway Commission has approved the application of the Burton Telephone Co. for authority to increase net rates on business service

Complete Outside | ENGINEERING CONSTRUCTION MAINTENANCE

For years, Neale has helped independent telephone companies from Coast to Coast plan, erect and maintain their outside plant at the lowest possible cost.

And, thanks to Neale engineering know-how, expert workmanship and careful supervision, these plants have given year after year of efficient, economical service.

The combination of know-how with practical experience that has won for Neale this enviable record is available to you, anytime, anywhere. Neale maintains highly skilled crews equipped with the latest tools at strategic locations throughout the country.

We'll be glad to help you solve your problems—whether it's planning, constructing or repairing your outside plant. Let us give you time and cost estimates.

Phone NEALE Today!

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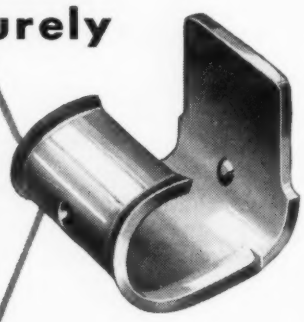
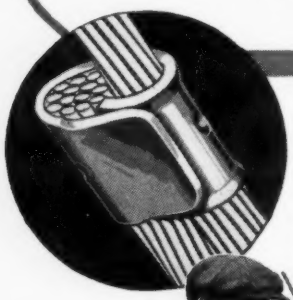
ENGINEERING • CONSTRUCTION • MAINTENANCE
TOPEKA, KANSAS PHONE 4-2621

Serve Up Strand Ends Quickly and Securely

With KEARNEY GUY WIRE CLIPS





This method of serving up strands is considerably more economical than the old method of using waste strand. Easily installed in one-fourth the time required by the older method, they serve up the guy strand ends more neatly and do not scratch or peel the strand galvanizing.

Available in six sizes in aluminum, galvanized iron or copper. Can be installed with pliers or with special Kearney Guy Wire Clip Tool.

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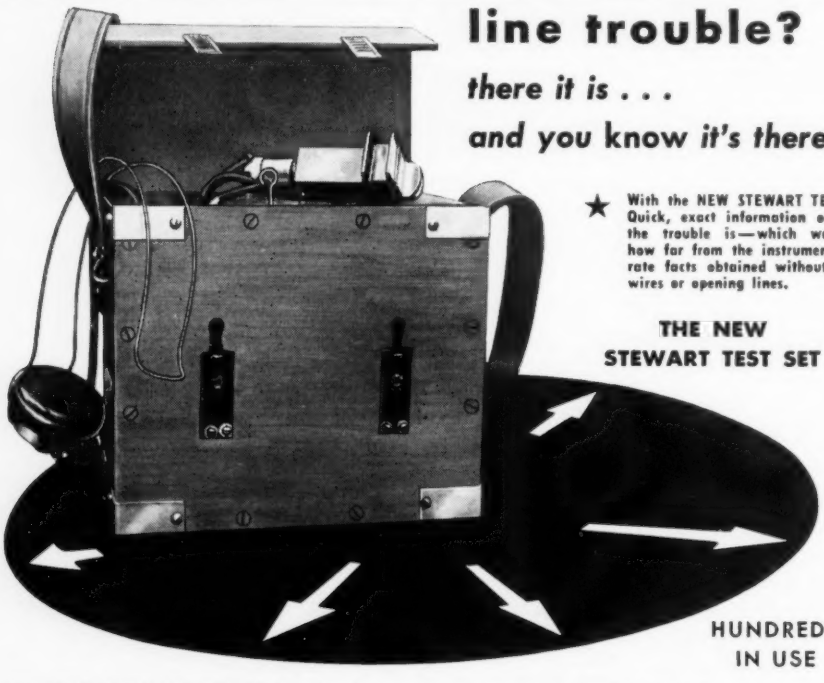
JAMES R. KEARNEY CORPORATION
4236 CLAYTON AVE. • ST. LOUIS 10, MO.
Overhead and Underground Utility Equipment

line trouble?

there it is . . .

and you know it's there!



★ With the NEW STEWART TEST SET. Quick, exact information on where the trouble is—which way—and how far from the instrument. Accurate facts obtained without cutting wires or opening lines.

THE NEW STEWART TEST SET

HUNDREDS IN USE

The NEW STEWART TEST SET is handy, convenient to work with, and absolutely practical. To get direction of trouble you use headphones, which transmit a ringing when detector coil is on the wire carrying current to trouble. When the direction is certain, you switch to the lamp for exact distance, as the lamp burns brighter, the closer you are to the trouble. Detector coil can easily be slipped into place even over insulated wire.

Set comes complete with all cords and clips, full length shoulder strap, leather top cover, and battery, ready for instant use.

WRITE TODAY FOR DETAILED BULLETIN

W. C. DILLON & CO., INC.
5410-X W. Harrison St. Chicago 44, Illinois

from $1.00 to $2.00 and on rural and urban residence service from 75 cents to $1.50. Mrs. L. B. Stone is the owner of the company, which is unincorporated. It serves five business and 35 rural and urban subscribers.

The company's six rural lines are subscriber-owned and maintained, and are in effect service stations. The urban line and the switchboard are the property of Mrs. Stone. Magneto service is given over grounded lines.

Mrs. Stone said that she could no longer operate under existing rates, and presented a petition approving the new rates signed by a majority of subscribers. Annual revenues will be doubled by the $375 which the new rates will add.

V V

Bell of Canada Asks Eight Per Cent Interim Rate Boost

The Bell Telephone Co. of Canada applied recently for permission to make an 8 per cent interim increase in rates on service in Ontario and Quebec. The application was filed with the Board of Transport Commissioners (TELEPHONY, Nov. 12, p. 26). Dec. 19 is the scheduled hearing date.

A company official stated the interim increase is necessary until the main application for an increase of 8 per cent is heard.

"It now appears the hearing of the main application cannot be commenced earlier than March, 1950. The final decision may be delayed until some months later," the company spokesman said.

He claimed the company has failed to earn its dividend requirements "by substantial amounts" since December, 1948. "If the company is not afforded relief, it is estimated that the additional deficiencies in the last quarter of 1949 will be $1,401,000, and in the first quarter of 1950, $1,390,000," he said.

V V

Given Time for Brief Filing

The Supreme Court of South Dakota on Nov. 21 granted intervenors in Northwestern Bell Telephone Co.'s rate case ten days for filing of a brief. (TELEPHONY, Nov. 26, p. 26.) The company has five days, if it is needed, in which to answer any new allegations the intervenors may make. Following this, the court will issue a ruling.

V V

Granted Higher Rates

An increase in rates, amounting to approximately $2,400 annually, has been granted to the Columbia Telephone Co., Corbett, by the Oregon Public Utilities Commissioner. Records of the company showed operating income

for the years 1945 as $1,032.32; for 1946, as a loss of $532.15; for 1947, as $791.39, and for 1948, as $429.64.

V V

Summary of Commission Rulings and Hearings

Florida Railroad & Public Utilities Commission

Dec. 5: Hearing on petition of Sneads (Fla.) Telephone Co. for authority to adjust rates.

Idaho Public Utilities Commission

Dec. 6: Hearing on application of Mountain States Telephone & Telegraph Co. for authority to increase rates.

Kansas Corporation Commission

Dec. 6: Hearings on applications of Kansas State Telephone Co., Baxter Springs, and Ellis (Kan.) Telephone Co. for authority to change rates.

Dec. 12: Hearing on application of American Telephone Co., Abilene, for permission to file a new rate schedule to be enforced on the effective date of Fair Labor Standards Amendments of 1949, regarding minimum wages.

Dec. 19: Hearing on application of Hewins (Kan.) Telephone Exchange for authority to change rates.

Dec. 20: Hearing on application of Council Grove (Kan.) Telephone Co. for authority to change rates.

Minnesota Railroad & Warehouse Commission

Dec. 6: Hearing on application of North Star Telephone Co., Mountain Lake, for authority to change rates.

Dec. 9: Hearing on application of Minnesota Lake (Minn.) Telephone Co. for authority to change rates.

New York Public Service Commission

Nov. 29: Hearings on petitions of Otselic Telephone Corp, Cincinnatus, and Chenango Valley Telephone Co., Chenango Bridge, for approval to transfer certain properties to Chenango & Unadilla Telephone Corp., Norwich.

Dec. 1: Hearing on joint petition of A. M. Johnson Telephone Corp., Hillsdale, and Copake (N. Y.) Telephone Co., for permission of former company to sell all physical property to latter company; for permission of Copake company to amend certificate of incorporation.

Oklahoma Corporation Commission

Dec. 14: Continued hearing on application of several companies for an order similar to expired regulation U-2.

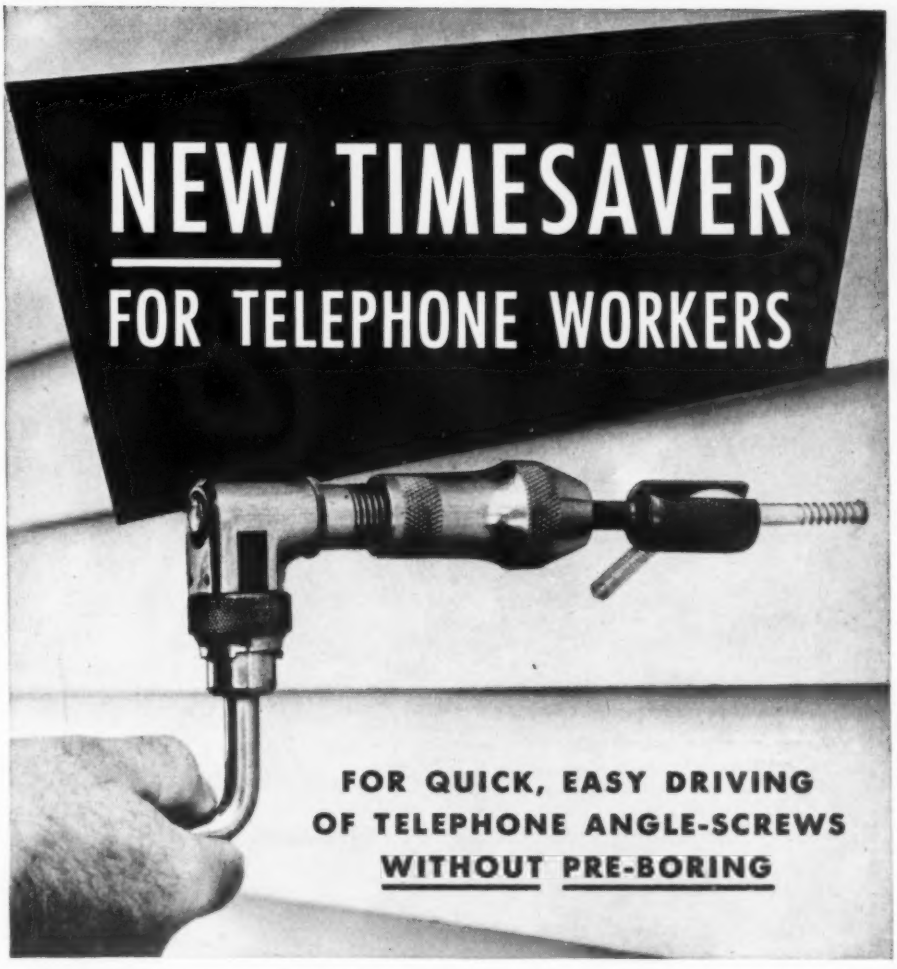
Jan. 25: Hearing on application of residents of Medford and other towns served by Southwestern Bell Telephone Co. for permanent restoration of free rates between Medford and six exchanges, Lexington and Purcell and Clinton and Arapaho.

Wisconsin Public Service Commission

Nov. 29: Hearings on applications of Green Valley Telephone Co. and Hillsboro (Wis.) Telephone Co. for authority to increase rates.

Nov. 30: Hearing on application of Fairwater, Brandon, Alto Telephone Co., Brandon, for authority to increase rates.

Dec. 1: Hearing on complaint of Frank Porter *et al* against Commonwealth Telephone Co., Madison, regarding service extension.

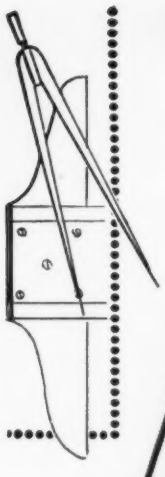


GREENLEE ANGLE-SCREW DRIVER

Eliminate time-wasting, troublesome angle-screw pre-boring for insulator installations. Save hours and do away with possibility of worker hand injury caused by older methods. Use the exclusive GREENLEE Angle-Screw Driver ... just insert the angle-screw into this sturdy, durable Driver and give a few turns with a regular brace. Your installation is completed in one fast, smooth operation! Get information now on this new GREENLEE tool, which weighs just 6 ounces and is only 4" long, yet saves time, multiplies manpower tremendously. Write Greenlee Tool Co., Division of Greenlee Bros. & Co.; 2072 Columbia Avenue, Rockford, Illinois.

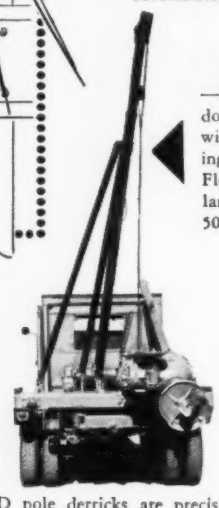
TOOLS FOR CRAFTSMEN
GREENLEE

OTHER GREENLEE TIMESAVING TOOLS FOR TELEPHONE INSTALLATION WORK
Hydraulic Pipe Pushers • Car Bits for Pole Work • Electricians' Auger Bits • Expansive Bits • Bell Hangers' Drills



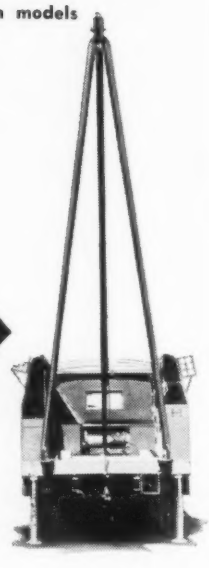
Designed to meet your needs...
PRECISION BUILT
POLE DERRICKS

Available in both steel and light weight aluminum models



T-TYPE POLE DERRICK
—handles wide range of work. Operates with double drum winch. Derrick head equipped with special cable guide rollers to avoid fraying or shearing cable —increases cable life. Flexible — adapted to trucks 1½ tons and larger. Lift — approx. 22 ft.; handles poles 50 to 55 ft. length.

TRIPOD TYPE DERRICKS
—handle wide range of lifts with ease and rigidity. Telescoping side-legs available for all models at slight extra cost. Derrick head equipped with roller guides for cable protection and long cable service life. Available in 4 models: handling poles 35 to 70 ft. lifting capacity up to 13,000 lbs. with stiff-leg in ground position.



FWD pole derricks are precision built to provide the utmost in safety and service. For complete information on derricks and other FWD line construction and maintenance equipment send for catalog.

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EAGLE MANUFACTURING CO.
Division of the Four Wheel Drive Auto Co.
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Write today for the complete catalog of FWD Line Construction and Maintenance Equipment — a useful reference book.

You can do a lot

with a little **GOLD SEAL TAPE**

JENKINS

It's the favorite of linemen and electricians—there's no *waste*. Gold Seal goes further! This extra tape value is like a gift. You can count on Gold Seal to produce not only better *taped* joints, but more joints per roll. In single rolls and handy 10-roll containers. Jenkins Bros. (Rubber Division), 80 White St., New York 13.

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The Operator's Corner

by Mayme Workman
Telephony's Traffic Editor

THE practice of holding the customer on the line, introduced in 1928, while an attempt is being made to complete his long distance call, probably did more to improve the speed of service on long distance calls than any other operating practice. This service is available to toll center and tributary customers alike but unfortunately there are still some tributary offices which have failed to adopt the CLR method.

Some tributaries have taken one step toward adopting the improved method of handling their customers' calls, that is, they record the customer's call and hold him on the line while they pass the details of the call to the toll center.

The direct recording method, which is most desirable, has several advantages to the customer, the tributary operator and the tributary company.

The advantages to the tributary customer are:

(a) Faster service, which results in a saving of his time.
(b) Hearing the progress of his call, which encourages him to wait on the line.
(c) Being on the line, so that he can volunteer further directions, when necessary.
(d) Conversation can start without delay when the called station or party is reached.
(e) Uniform service to all customers —tributary and toll center—results.

The advantages to the tributary operator are:

(a) More time to handle local calls.
(b) Operator and circuit time spent in passing tickets and relaying reports saved.
(c) Duplicate tickets eliminated.
(d) Number of errors reduced.

The advantages to the tributary company are:

(a) Reduces operator work time.
(b) Tends to eliminate errors on toll tickets.
(c) Saves time in checking memo tickets.
(d) Avoids duplicate billing.

To obtain the best results from the direct recording method, both tributaries and toll centers must assume their respective responsibilities:

The tributary operator's responsibilities are:

(a) Prompt answer to customer.

(b) Prompt answer to toll center.
(c) No delay in transferring customer to toll center.
(d) Reports promptly and accurately given.
(e) Customer's line and toll trunk promptly released at end of conversation.

The toll center operator's responsibilities are:

(a) Prompt answer to tributary signals.
(b) Signals answered in order of precedence.
(c) Tributary customer kept informed regarding progress of call.
(d) Calls accurately timed.

In handling a customer's call the objective should be accurate, speedy, dependable and pleasing service. The tributary and toll center operator share the responsibility for good service; therefore, improvement of the service from the customer's viewpoint is desirable. The use of the direct recording method will help accomplish this objective.

If your office is not using this method, introduced 21 years ago, why not get on the band wagon and give your customers a break? They are entitled to the advantages derived from improved operating methods.

Traffic Questions

(1) When was CLR service started?

(2) Who is responsible for rendering satisfactory toll service to tributary subscribers, the toll center or the tributary operator?

(3) What is "Initial Training?"

(4) When you receive a report that the called party has a non-published telephone, how should the report be entered on your ticket?

(5) Should each operator have an individual headset?

Answers are presented on page 74.

V V

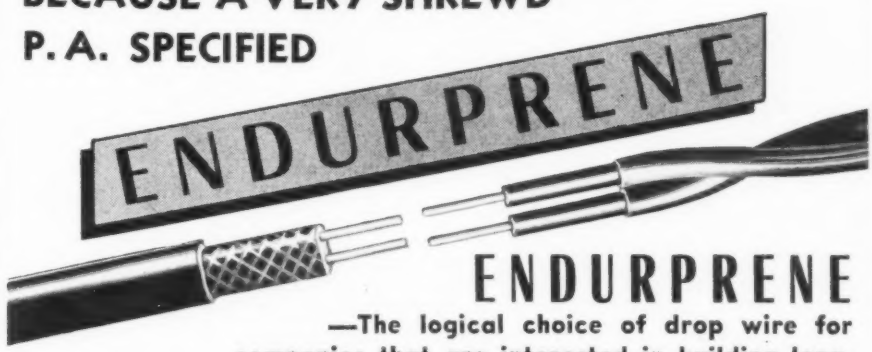
OBITUARIES

HARRY D. MILLER, 83, organizer and secretary-treasurer of the Stanton (Neb.) Telephone Co. and president of the First National Bank of Stanton, died Nov. 2 in Omaha. Mr. Miller had been organizer and part owner of various businesses in Stanton and a member of several organizations. He was a past member of the state Democratic committee and had been a delegate-at-large to the 1932 national convention.

• • •

WILBUR F. OPDYKE, formerly connected with the commercial department of the Jamestown Telephone Co., died Nov. 21 in Cleveland, Ohio, where he had resided in recent years. He was 68 years old.

THEY'RE **ALL HAPPY**
BECAUSE A VERY SHREWD
P. A. SPECIFIED



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FOR STRENGTH—A Bronze Conductor*
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FOR INSULATION—Natural Rubber

AND For a long life in heat and cold, rain and shine, smoke and fumes, a rugged jacket of

NEOPRENE

*Also available in copper and copperweld.
Samples and Data on Request

DISTRIBUTED BY:
KELLOGG SWITCHBOARD & SUPPLY CO.
CHICAGO, ILLINOIS

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE 5, RHODE ISLAND

This Company Prepared Own Case

(Concluded from page 27)

aside from those already mentioned in Exhibit No. 6.

(1) To relieve facilities in the village a 100-pair cable will be extended from the central office through the eastern residential section of the village to highway 32, a matter of one-half mile.

(2) The Heiser corner, on highway 32, four miles S. E. of Pulaski will be rebuilt.

(3) An "H" fixture corner at the intersection of highway 32 and county trunk S, three miles north of the village, will be installed.

(4) Rural line facilities are to be extended one and one-half miles in the town of Chase to serve three applicants.

(5) Extend facilities 15 spans to an implement dealer N. E. of Krakow.

(6) Extend rural line one mile to applicant demanding service east of Angelica.

(7) Replace existing line paralleling a new bridge which was recently constructed on a town road in Chase township.

Beyond the reasons put forth thus far the attached exhibits are offered trusting they will bear out, to the commission's satisfaction, the need for rates requested in the company's petition dated Sept. 8, 1948.

The exhibits, referred to in the "Index of Contents" and "Narrative" are illustrated in these pages, so that owners and managers of small telephone companies may have an idea of the minimum amount of accounting work and preparation that was required by the Pulaski Merchants & Farmers Telephone Co. in presenting its rate case to the Wisconsin Public Service Commission.

ABC of the Telephone

(Continued from page 30)

ostensibly is to charge the storage battery. However, any electrical circuit could be substituted for the storage battery and the net result would be the same.

In *Fig. 3-B*, the arrows indicate the direction of current flow in the circuit as the ac wave is effective through one half of the cycle. When the second half of the ac cycle is effective, as illustrated in *Fig. 3-C*, current in the transformer is reversed. The remaining arrows indicate a different pattern of current flow in the balance of the network. However, the important fact is that the current flow through the battery or load remains in the same direction.

The circuit described above is known as a full-wave, single-phase rectifier. The wave pattern of the dc obtained from this unit is shown in *Fig. 4*. Compared with the half-wave rectifier, the full wave rectifier provides an uninterrupted pattern above the reference line used in the original ac sine wave illustration. However, this uninterrupted dc pattern in no way approaches what would be considered a smooth flowing current. Actually, the current is little more than a series of connected pulsations which would create a decided ripple in the dc circuit.

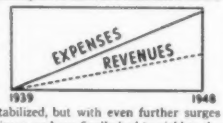
In many instances, particularly in applications used in telephone and radio circuits, a relatively high current output is required, plus a smaller ripple component. The basis of meeting these requirements can be found in a three-phase, full-wave rectifier, shown in *Fig. 5-A*. The important point to remember in studying this circuit is the ac supply. Three separate ac phases are being applied to the circuit simultaneously. Each of these phases should be considered separately in analyzing the circuit. Using the illustration as a guide, the three phases are as follows:

Phase 1—Terminals 1 and 2
Phase 2—Terminals 2 and 3
Phase 3—Terminals 1 and 3

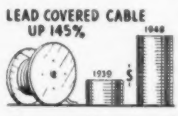
RIGHT: Letter sent to subscribers by the Pulaski Merchants & Farmers Telephone Co. before rates were increased. LEFT: Bill insert announcing higher rates as approved by Wisconsin Commission.

WHY NEW TELEPHONE RATES ARE NECESSARY

For the past twenty-eight years the Pulaski Merchants and Farmers Telephone Company has operated on its present low schedule of rates. In that time the company has attempted to build and maintain a record of good service. During the past nine years particularly it has been a sizeable task. Costs of operation have skyrocketed to new heights and though revenue, due to increased usage of telephones, has risen somewhat it has lagged far behind the rising price of material and wages.



Along with many others, we anticipated that perhaps this year there would be a leveling-off period, that prices would become stabilized, but with even further surges upward in the cost of doing business we have finally had to yield to the hard fact that the present rate schedule is inadequate; that more revenue is essential for continuance of business. Reluctantly, therefore, we have taken the step. There is now before the Public Service Commission of Wisconsin our appeal for higher rates. Those requested are only comparable to rates which have been approved for other companies of like size in the State.

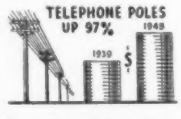


To those in business, to wage earners and to farmers the rising cost of operation, living and machinery is only too well known.

In our business, for example, the batteries used in telephones have risen 86% in price since 1934.

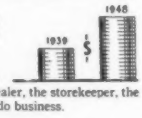
Lead covered cable of which we will soon require a considerable amount to relieve congested conditions within the village has gone up 145%.

Since 1939, telephone poles have risen 97%.



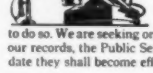
Wage costs which constitute over 56% of operating costs have gone up over 100% since 1939 and will continue to rise since the increasing traffic has made it necessary for us to plan a supplement to the present operator force. Too, outside construction work has become so heavy that permanent additional help for maintenance of lines and replacement of equipment is now essential.

Rubber covered copper wire is up 98%.



Yes, and telephones are more expensive today by 34% than they were only 8 years ago. Iron wire costs twice what it did prior to 1940. Gasoline prices in the last 10 years have increased 67%.

We have been caught in the rising tide of high costs just as the butcher, the baker, the garagemen, the hardware and implement dealer, the storekeeper, the tavern keeper, the farmer and all those with whom we do business.



We ask an increase in rates only because rising costs have finally forced us to do so. We are seeking only enough new revenue to cover added costs of furnishing service. After reviewing our records, the Public Service Commission of Wisconsin will determine the new rates and will specify the date they shall become effective.

THE PULASKI MERCHANTS & FARMERS TELEPHONE COMPANY

NEW MONTHLY LOCAL SERVICE RATES

With telephone bills mailed in September, it was announced that after doing business on the same low schedule of rates for 28 years, the Pulaski Merchants and Farmers Telephone Company had found it necessary to appeal to the Public Service Commission of Wisconsin for an increase to meet the enormous rise in the cost of doing business.

At a hearing on October 19, the Commission heard the Company justify this appeal, and after thorough study of the records presented, issued an order stating that the Telephone Company withdraw its present schedule of rates as they were "unreasonable because of inadequacy" and place into effect the following schedule on December 1, 1948.

RESIDENCE SERVICE

	Gross Rate	Net Rate
1-Party Line	2.75	2.50
2-Party Line	2.50	2.25
4-Party Line	2.25	2.00
Rural Line	2.25	2.00
Extension Telephone		.75

BUSINESS SERVICE

	Gross Rate	Net Rate
1-Party Line	3.75	3.50
2-Party Line	3.25	3.00
Rural Line	2.75	2.50
Extension Telephone		1.00

The above listed rates do not include Federal Tax. Under Federal law all local exchange telephone service is subject to a 15% tax which is billed and collected by the Telephone Company and remitted to the government monthly.

Aside from the rates listed above, installation, move and change of equipment charges have also been revised slightly.

NON-SUBSCRIBER CHARGE DISCONTINUED

With introduction of the new rate schedule the 10 cent charge for calls placed by non-subscribers is discontinued.

We shall be glad to answer any questions you may have.

THE PULASKI MERCHANTS AND FARMERS TELEPHONE CO.

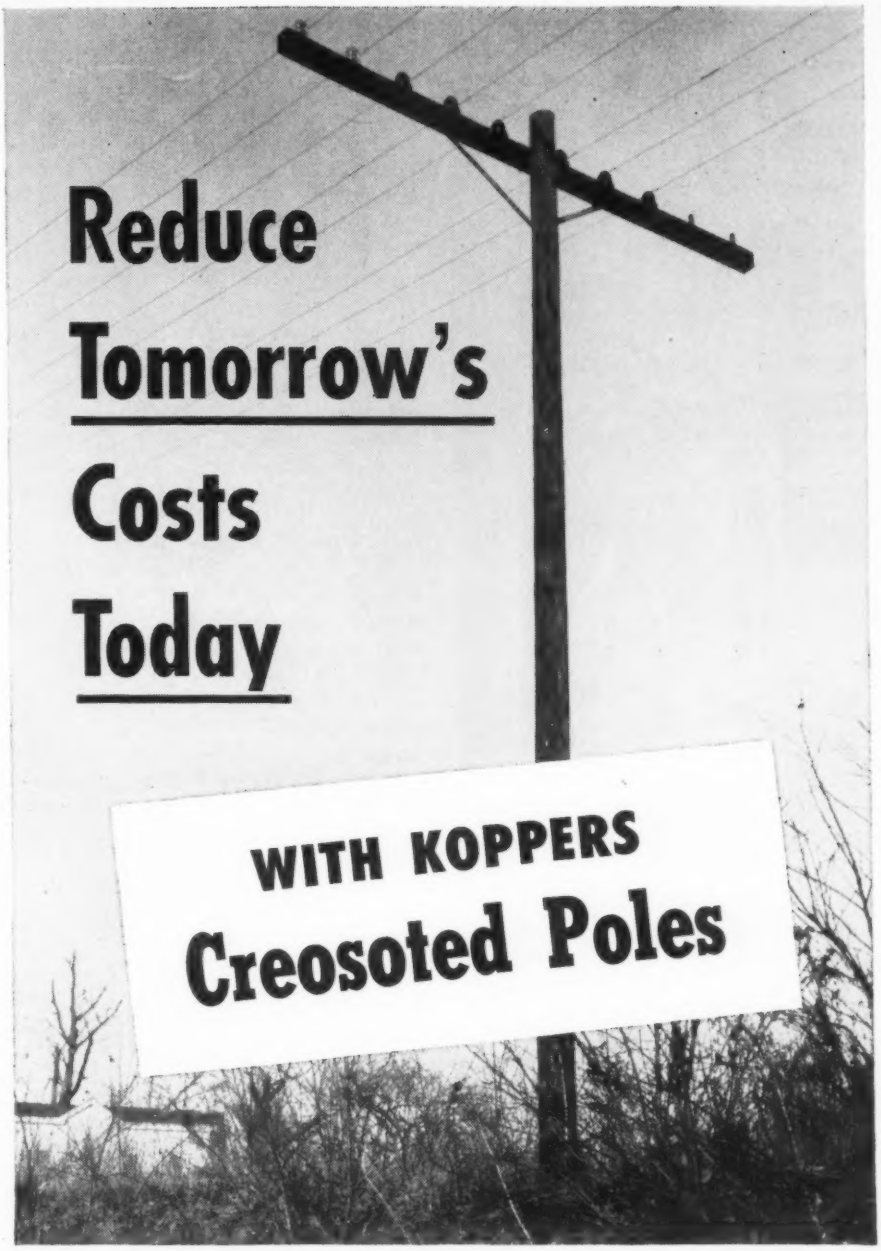
The process of rectification is analogous to that described previously. As an example, the pattern for Phase 2 is shown in *Figs. 5-B* and *5-C*. Again, the direction of current through the dc load is the same at all times.

An analysis of the current action for each of the other ac phases will reveal that the direction of current through the dc load remains the same for all of the phases. As a result, the wave pattern of the direct current supplied by this rectifier will be a combination of the currents supplied by each of the phases as shown in *Fig. 5-D*. Compared with the single phase rectifier, the wave-form of the dc output current is somewhat different. The essential difference lies in the smaller ripple component found in the dc current.

Up to this point, little consideration has been given to the fact, illustrated in *Fig. 2-B*, that a very little current *does* flow from the copper to the copper oxide disc of the rectifier pile. Actually, the current in the dc load would have the wave pattern of a decidedly unbalanced alternating current. For this reason, in applications requiring current free from ripple or pulsation, rectifiers are equipped with filter circuits. The actual design of the filter circuit will be controlled largely by the percentage of ripple component tolerable in any particular application. As an example of the consideration given the ripple component found in the dc load, rectifiers used in telephone service are designed to reduce the dc ripple to a fraction of 1 per cent. Rectifiers used to supply the filaments of radio broadcast amplifier tubes are designed for a practically complete elimination of ripple measured in terms of around a thousandth of 1 per cent.

A typical filter circuit as commonly used with rectifier units is shown in *Fig. 6*. The filter consists of a retardation or choke coil connected in series with the dc load and a condenser connected across the load. Both of these units of telephone apparatus have been discussed fully in previous installments of this series.

Actually, without a filter circuit, the pulsating output wave of a rectifier can be considered as equivalent to a constant value with a super-imposed ripple. The net result is a combination of direct and alternating current components which must be considered separately in an explanation of the action of the filter circuit. The direct current component will pass freely through the choke, but cannot flow readily through the condenser. The only path left open is through the load and thence back to the rectifier.



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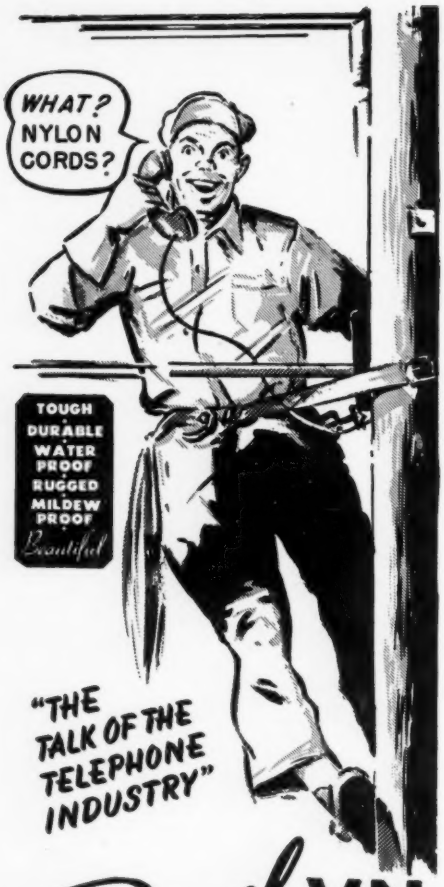

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On the basis of this reasoning, the direct current is effective through the load. The alternating current component is very definitely opposed by the inertia characteristics of the choke coil, and, as a result, its flow is restricted. Nevertheless, part of the alternating current component does flow through the choke coil. Once through the choke, the path of least resistance back to the rectifier is through the filter condenser. The condenser acts as a by-pass and, to a large extent, the minute amount of alternating current that passes through the choke is prevented from flowing through the load. As a result, a filter circuit used in conjunction with a rectifier creates a source of nearly pure direct current.

Installation of Rectifier Units

As a general rule, rectifier units should be mounted on a wall in an upright position, at least six feet from the switchboard. A location should be selected where a free circulation of air is available through the openings generally provided at the bottom of the unit. For most efficient operation, the normal room temperature should not exceed 95 degrees F. If temperatures in excess of this figure are a common occurrence during the summer months, the maximum safe load for a rectifier usually is computed on the following basis:

Temperature	Maximum Safe Load
105° F.	90% of normal
112° F.	80% of normal
122° F.	70% of normal
130° F.	60% of normal

NOTE: The percentages of normal safe load given above are approximate figures. The manufacturer is in a better position to recommend an exact figure for a particular application.

A rectifier must be connected to a reliable source of alternating current with the correct current requirements as specified by the manufacturer on the nameplate. Some rectifiers are equipped with a series of input ac terminals providing a method of compensating for commercial power currents of different voltages. Certain other rectifiers have an automatic input regulator or ac stabilizer unit. These units provide a constant ac input current from any line within the range of 95 to 130 volts.

Another important requirement is that the frequency of the ac power supply must not vary more than plus or minus 0.5 per cent from the rated value shown on the nameplate. Practically all of the commercial power companies supply current that meets this requirement. A simple check is whether or not electric clocks can be operated on the power company lines. In the event the commercial power does not meet the requirements of the particular unit, the rectifier manufacturer or his representative usually is in a position to recommend a suitable ac stabilizer unit.

(To be continued)

In the Nation's Capital

(Concluded from page 34)

sion plan were made without consulting the union. The union's president, Joseph A. Beirne, contends that under a U. S. Supreme Court ruling negotiations over employe pensions should be part of collective bargaining.

Traditionally, the Bell System has always reserved the right to make changes in its pension plan, first established in 1913 on a non-contributory basis. The pension plan is not covered by any existing labor contracts with the union. This may be the real reason for the union's peeve over the liberalization of the Bell pension system. The union strategy called for the inclusion of pension benefits as well as wage increases in new contracts to be negotiated when some of the existing contracts expire next year. The company's announcement removing pensions from the area of possible conflict leaves the labor leaders with less to discuss.

Although the union president asserted that "it is actions like this that promote strikes," it is difficult to conceive of a strike over a benefit granted, solely because of the way in which it was granted, i.e., without union intervention. Bell System spokesmen have observed that the pension changes were made to bring immediate benefit to all Bell System employes "including those not represented by the union as well as those who are." Any legal attempt by the union to revoke, generally, benefits to employes, already voluntarily granted by an employer, would seem to be unprecedented.

The situation seems to recall the old joke about the unreconstructed Irish rebel who blazed up in anger when he heard the news in 1921 that the government of Great Britain, through its prime minister, the late Lloyd George, had granted Ireland independent dominion status. "I suppose this means," the old man cried bitterly, "that we have nothing more to fight the British about."

Co-op Competition Fatal

An example of what can happen to private investment of a public utility

Announcing The LORAIN SUB-CYCLE RT-UNITS

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+.87 amp 14-28V. DC Supply for talking
+.5 amp unfiltered DC for signalling
+10 ±1V. and 20 V. ±2V.
60 Cycles for signalling

MODEL RT-2
3½ Watt 20 Cycle BC self-starting Sub-Cycle
+2 amp 34 ±6V. DC talking supply

MODEL RT-3
3½ Watt 30 Cycle BC self-starting Sub-Cycle
All other features same as Model RT-1 but less expensive

MODEL RT-4
3½ Watt 30 Cycle BC self-starting Sub-Cycle
All other features similar to Model RT-2 but less expensive

T-UNITS

DC POWER SUPPLY PROVIDES

MODEL T-1
0.87 amp 14-28 V. DC for talking
0.5 amp 18-28 V. DC for signalling
10 ±1 V. 60 Cycles for lamps
20 ±2 V. 60 Cycles for buzzers

MODEL T-2
2.0 amps 34 ±6 V. DC for talking

MODEL T-3
0.5 amps 22-30 V. DC for talking

MODEL T-4
1.0 amp 40-52 V. DC for talking

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company where competition from a co-operative is not regulated was seen in a development last month in New Mexico where an electric company asked the state public service commission for permission to abandon its operations. This came about directly as a result of competition from a rural electrification co-op.

The commission permitted the New Mexico Mechanical Equipment Co. to abandon service in the Lincoln County area, but condemned the Central New Mexico Electric Cooperative, Inc., for taking over the private utility's territory "without just compensation and in violation of the Rural Electrification Act." All of the company's former customers (117) are now served by the co-op. It granted the company's plea for abandonment because "petitioner can no longer continue in business." A loss of $26,690 in actual cost of plant investment was involved.

The chairman of the New Mexico commission, W. W. Nichols, said that this case seemed to be the exception rather than the rule. In some cases, REA co-ops had paid considerably in excess of the depreciation value for New Mexico systems. "I'm a firm believer in the REA as long as it's operated as it's supposed to be," Nichols said.

V V

Lincoln, Nebraska, Had Its First Exchange 70 Years Ago

The *Lincoln Telephone News*, house organ of the Lincoln (Neb.) Telephone & Telegraph Co., notes in a current issue that the 70th anniversary of the construction of an exchange in Lincoln took place on Nov. 17. The company was organized by 40 Omaha and Lincoln business men, including L. H. Korty and J. J. Dickey, who later became national executives of the Western Union Telegraph Co.

Subscribers were limited to a narrow area in the business district, and the telephone was fastened to the wall. Lines strung along rooftops to the switchboard completed the construction. The switchboard was of the old cross-bar type, each subscriber's line being permanently connected to one of the vertical bars.

Connections were established between two lines by joining them with metal pins passing through horizontal bars and fitting into holes on both sets of bars. The old Nebraska Bell company later owned the exchange, and in 1912 transferred its property to the present company, which had entered the field as a competitor eight years earlier.

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Once your employees have used Armature Brand Linen Lacing twine they will accept no substitute. The Linen fibre insures lasting qualities and its added strength keeps costly breaks at a minimum. Manufactured in various sizes to meet your exacting requirements.

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These insulators are tough, too. Abnormal loads will bend the pin before an Armstrong Insulator breaks or crushes. They are not damaged by extremes or sudden changes in temperature.

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Cut replacements

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telephone dry cells!

And for flashlights . . . count on Ray-O-Vac LEAK PROOF Flashlight Batteries, too . . . for dependable, efficient service. They're *sealed in steel* to lock in the power . . . to prevent leaking, corroding and sticking . . . to *stay* fresh. That's why they carry this guarantee (reprinted below). Be *sure* of the flashlight batteries you buy —always ask for Ray-O-Vac LEAK PROOFS!

Guarantee:

If your flashlight is damaged by corrosion, leakage, or swelling of this battery, send it to us with the batteries and we will give you FREE a new comparable flashlight with batteries.

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HAPPIER DAYS AHEAD FOR THIS SMALL COMPANY

ARE your rates for telephone service too low?

Is your plant run down?

When you consider the possibility of increasing your rates to the point where your exchange can really make money, do you face a blank wall?

If so, then the case-history of the Hazel (Ky.) Telephone Co. as related by Dan Corman, sales engineer for the Kellogg Switchboard & Supply Co., may help show the way to better days for you.

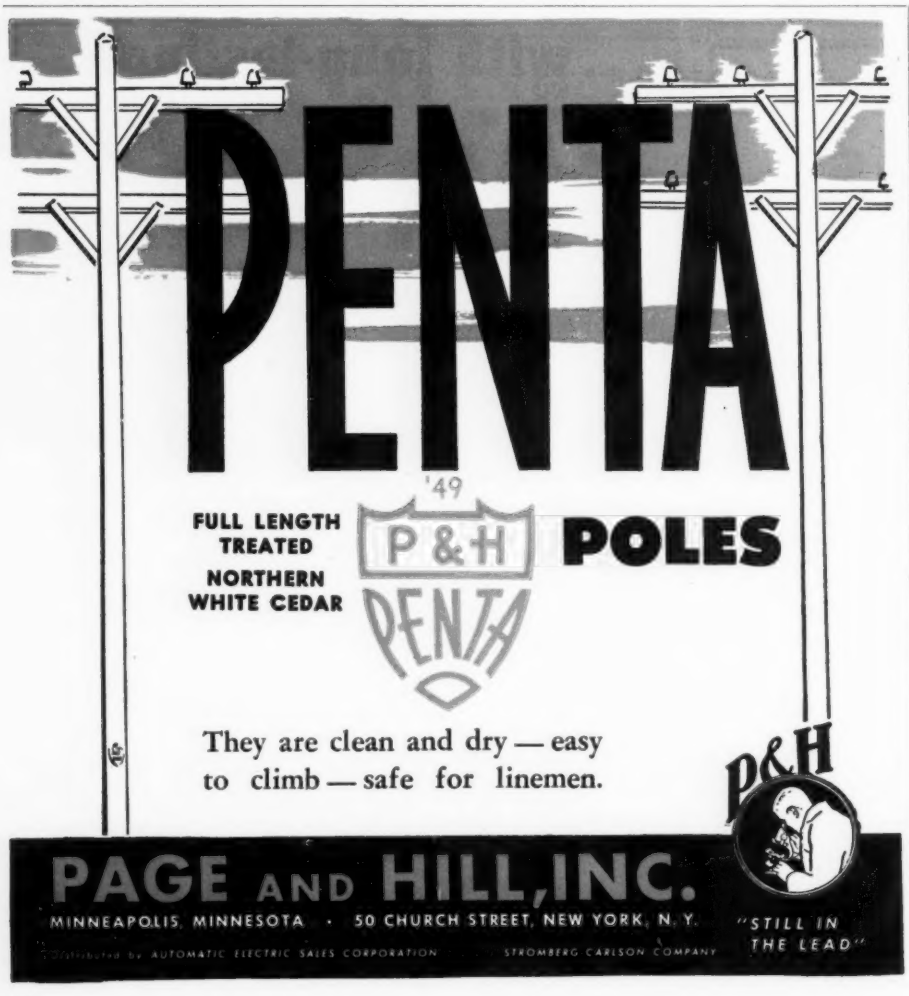
The Hazel company is owned by Mrs. Jewell Bailey, a woman whose business-like mind told her that a plant having about 200 stations and with the possibility of serving a much larger number, should show a profit instead of the losses which her monthly statements were indicating (if certain things were done). And so Mrs. Bailey decided to do something about it.

Her first step was to consult with Mr. Corman, to whom the financial and physical shortcomings of the Hazel exchange were quickly apparent. He knew that a town like Hazel, with its population of about 1,000 and its location in a fine agricultural area, deserved the best in telephone service and that the owner deserved a fair return on her investment and her efforts.

A quick appraisal of the plant's physical condition showed its many defects, and a similar appraisal of the financial set-up indicated the need for a loan sufficient to cover the situation. The fact was that unless the service could be improved to meet the requirements of the community, Hazel would either be without telephones or a new company would take over.

The case was placed before local financial interests and the Reconstruction Finance Corp., which investigated the merits of the proposition and were quickly sold on the idea of advancing the necessary money. Arrangements were made by Mr. Corman with a high-grade local building contractor and a conscientious attorney of that vicinity, and between them the project was soon well under way. Mr. Corman and the attorney prepared evidence and material upon which to base the request for a rate increase, which the commission granted without delay. And Mr. Corman stressed the fact, as he was telling the story of the Hazel exchange, that quality in both contracting and legal service are as important as quality in the equipment itself.

Before long, the improved facilities were ready to operate. The ridiculously low rates were raised to the point where the better service could produce for the owner a fair and well-deserved profit. Patrons were happy to pay the



"I still think an extension telephone would be simpler . . ."
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increased rates because the service they received was so much improved, and Mrs. Bailey now heads a healthy and remunerative exchange instead of the "sick" business she had before. Everybody in Hazel, telephone-wise, is happy today. The owner says she is "thrilled to death over the improvement." Telephone users do not mind being quoted when they say they are delighted. And, as Mrs. Bailey said in a recent letter to Mr. Corman, "we are looking forward to happier and better days."

"The Hazel situation has many counterparts," says Mr. Corman, "and solutions may be found in other small communities just as in this instance. The case points to two fundamental facts: First, the public should have the best local telephone service that can be supplied; second, the exchange owner should have a rate of return commensurate with such improved service."

Now, Hazel meets both, hence the title of this story, "Happier Days," is not out of order.

V V

Dr. F. B. Jewett, Noted Engineering Authority, Dies

Dr. Frank B. Jewett, former vice president of the American Telephone & Telegraph Co. and president of the Bell Telephone Laboratories from 1925 to 1940, died Nov. 18 at a Summit, N. J., hospital. He was 70 years old. Death came a week after he entered the hospital for an emergency abdominal operation.

Former president of the National Academy of Sciences and holder of numerous medals and awards, Dr. Jewett was acknowledged to be one of the world's most distinguished leaders in scientific and industrial research. He was recently awarded the Hoover Medal for 1949, for "distinguished public service." The medal was to have been presented at the forthcoming winter general meeting of the American Institute of Electrical Engineers. In October he was chosen to receive the 1950 medal of the Industrial Research Institute for "outstanding accomplishment in leadership and management of industrial research."

Dr. Jewett was a native of Pasadena, Calif. He received his Bachelor of Arts degree from Throop Polytechnic Institute (now California Institute of Technology) and the Doctor of Philosophy degree from the University of Chicago. Before entering the Bell System in 1904 he spent two years as an instructor in physics and electrical engineering at Massachusetts Institute of Technology while also doing work in electrical engineering as a graduate student.

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During his early years with the AT&T he was responsible for much of the engineering research which later made possible the transmission of speech by telephone lines across the continent. In 1912, he joined the Western Electric Co. as assistant chief engineer, and became chief engineer four years later. He moved up to a vice presidency of Western Electric in 1922, and in 1925 he was elected vice president of AT&T in charge of the department of development and research. In the same year the engineering department of the Western Electric was incorporated as Bell Telephone Laboratories, and Dr. Jewett became the first president. He continued in this capacity until 1940 when he became chairman of the laboratories board.

During his 15 years as active head of the laboratories the art of telephony made some of its most significant advances, and under his leadership the Bell laboratories became the world's largest industrial research organization in the field of communications. His scientific abilities were combined with warm human qualities and a strong personality essential to planning and leadership.

When Dr. Jewett reached the retirement age of 65 in 1944, AT&T and Bell laboratories established in his name five fellowships which are awarded annually for post-doctorate work in the physical sciences.

His contributions to the nation's military strength were outstanding in both World War I and World War II. In the former he served in the Signal Corps with the rank first of major and later lieutenant colonel. He was also an advisory member of the Navy's special submarine board and a member of the State Department's special committee on cables. For this he was awarded the Distinguished Service Medal. During World War II, Dr. Jewett was a major contributor to the activities of the National Research Council and the national defense research committee of the Office of Scientific Research and Development, the top civilian agency which coordinated the efforts of thousands of civilian scientists. In recognition of this work the government awarded him the Medal for Merit, the nation's highest award for civilian services in wartime.

Among Dr. Jewett's numerous other activities and affiliations were the following: Trustee, Carnegie Institution of Washington, Princeton University, Carnegie Institute of Technology and the Woods Hole Oceanographic Laboratories; life member, MIT Corp.; Fellow, American Institute of Electrical Engineers, American Association for the Advancement of Science, American Physical Society and the American Academy of Arts and Sciences; vice chairman, 1919-1925, of the Engineering Foundation; chairman, 1923-27, of the division of engineering and industrial research, National Research Council; member, President Roosevelt's Science Advisory Board, 1933-35 and the American Philosophical Society. He held honorary degrees from a large number of colleges and universities.

Honors came to Dr. Jewett over a long period of years. They included the Fourth Order of the Rising Sun, bestowed on him by the Japanese Government in 1923, and the Third Order of Sacred Treasure, from the same source, in 1930; the Edison Medal in 1928; the Faraday Medal of the Institute of Electrical Engineers of London, in 1935; the Franklin Medal in 1936; and in 1938 the John Fritz Gold Medal, highest American engineering honor.

Dr. Jewett is survived by two sons, Harrison L. Jewett of Short Hills, N. J., and Frank B. Jewett, Jr., of Minneapolis.

V V

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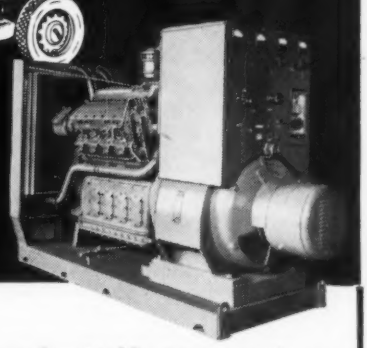

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by Telephone," a service put out by RAIS, the American-controlled radio station and the telephone company.

Of the calls, half were placed from the Soviet sector of the city, officials said, indicating the Germans there may be tired of the diet offered by Communist-directed papers.

V V

Russell Hopley, Northwestern Bell President, Dies

Russell J. Hopley, president of the Northwestern Bell Telephone Co., died Nov. 23, in Omaha, Neb. He had been recuperating from an illness.

Mr. Hopley, who had been president of the company since 1942, was widely known for his many business and civic activities and for his work in developing the national defense plan, "Civil Defense for National Security," for which he received the first award ever made by the National Military Establishment for distinguished public service.

The son of John Barnes and Mary Elizabeth Hopley, he was born in Blue Island, Ill., on Apr. 28, 1895. He was married to Helen Joyce Kreymborg of Omaha on Feb. 6, 1931.

He began his career as a collector for Northwestern Bell in Ft. Madison, Iowa, in 1915. Except for the period of the first World War, his entire business career has been spent with the company. He came to Omaha in 1929 as commercial operations supervisor; in 1937 he became operating vice president.

Mr. Hopley's business connections included his directorships in the United States National Bank, the Nebraska Savings and Loan Association, both of Omaha, and the Northwest Bancorporation of Minneapolis. He was also a director, vice chairman of the board, and chairman of the executive committee of the Mutual Benefit Health and Accident Association, Omaha, as well as a director of the Companion Life Insurance Co. of New York.

The civic activities with which Mr. Hopley was associated included: deputy secretary of defense, personal advisor to the secretary of defense, consultant to the office of Civil Defense Planning, national director of the United Service Organization, National Council for Community Improvement, American Cancer Society.

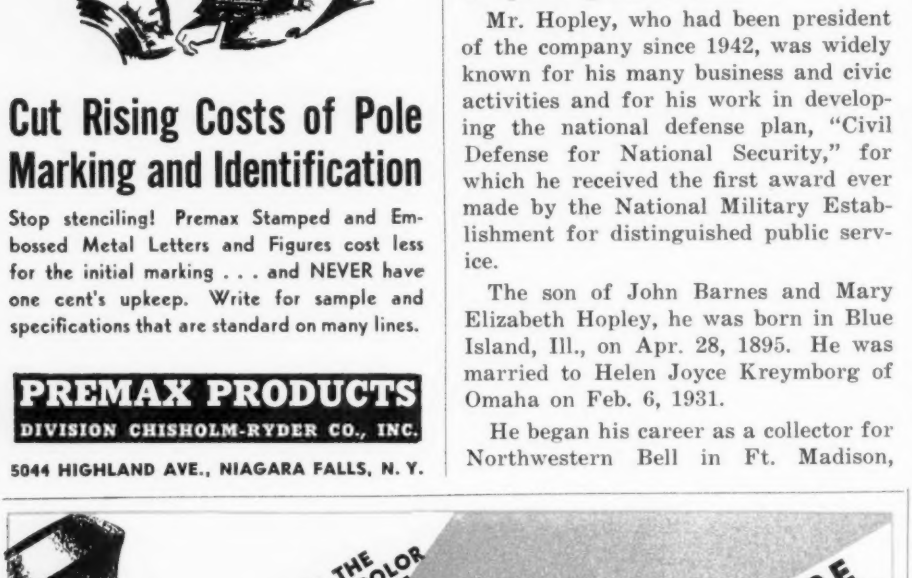
He was also a trustee of the University of Nebraska Foundation, vice president of the Nebraska Resources Foundation from 1946 to 1949, and a member of the resources committee the same years. A member of the Fifth Army advisory committee and the National Society of Scabbard and Blade, he was president of the Nebraska division of the American Cancer Society in 1948-1949 and Nebraska state chairman of that group those years.

A trustee of Children's Memorial Hospital, Mr. Hopley was also a member of L'Alliance Francaise, the Newcomen Society of England, Salvation Army Advisory Board, Omaha Engineers' Club, Omaha Rotary Club, Pro Tem Club, American Legion, Army Signal Association, Navy League, National Aeronautic Association, and the Independent Telephone Pioneers of America.

In 1928 Mr. Hopley was international vice president and director of Conopus Clubs. From 1925 to 1929 he served on the Des Moines Interracial Commission. In 1949 he was given an honorary doctorate of law by Park College, Parkville, Mo.

He served in World War I in the Field Signal Battalion of the A.E.F. During World War II he was a member of the Air Force Personnel Procurement Board. He was on the advisory board for United Seamen's service.

Mrs. Hopley survives, as do two sons, Russell, Jr., and John; and two sisters, Miss Irma Hopley, Ft. Madison, Iowa, and Mrs. J. K. Jackson, Chicago, Ill.


HERE'S THE DATING COLOR CODE CHART
1947 WHITE
1948 YELLOW
1949 RED
1950 GREEN
1951 BLUE
1952 GREY
1953 ORANGE
1954 WHITE AND YELLOW
1955 WHITE AND RED
1956 WHITE AND GREEN
1953 1954 1955 1956 1947 1948 1949
DATED ALPHADUCT DROP WIRE
This simple method of DATING DROP WIRE furnishes a FOOL-PROOF method of checking service life . . . originated by ALPHADUCT in 1947.
Blue and orange threads always identifies ALPHADUCT as the MANUFACTURER.
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INDICATES wire delivered in 1949.
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Ray Blain, TELEPHONY's technical editor, wrote in his Plant Man's note book, TELEPHONY May 21 issue: "The maintenance of accurate service records of individual drop wire installations in the average exchange proves a most difficult task.

This difficulty has been largely overcome by the design of DATED DROP WIRE that is now being sold by at least one manufacturer.

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California Company Changes Name

An announcement was made on Nov. 15 by Richard L. Rosenthal, president, Citizens Utilities Co., Greenwich, Conn., and its subsidiary, Public Utilities California Corp., that the name of the latter company has been officially changed to Citizens Utilities Co. of California. According to Mr. Rosenthal, the name change has been made to link the subsidiary with the parent company, as well as to eliminate the word "Public" which has caused people to confuse Public Utilities California Corp. and Public Utilities Commission.

In announcing the name change, Rosenthal also announced that the company is discontinuing its San Francisco headquarters. Its telephone division will move to Redding, Calif., while its water division will move to North Sacramento, Calif. The corporate office will be located in Redding.

It was pointed out that these moves have been made so that better supervision can be provided for the rapid expansion being experienced in both the telephone and water divisions. The water division is headed by F. J. Keys, and the telephone division by D. A. Perigo.

Citizens Utilities Co. of California provides telephone service in and about the following communities: Adin, Alturas, Bieber, Burney, Canby, Chester, Elk Grove, Fall River Mills, Ferndale, Greenville, Rio Vista, Susanville, and Surprise Valley. It provides water service in North Sacramento, Niles, Guerneville, Boulder Creek, and Half Moon Bay.

V V

Monthly Fire Losses at Low Point for Year in October

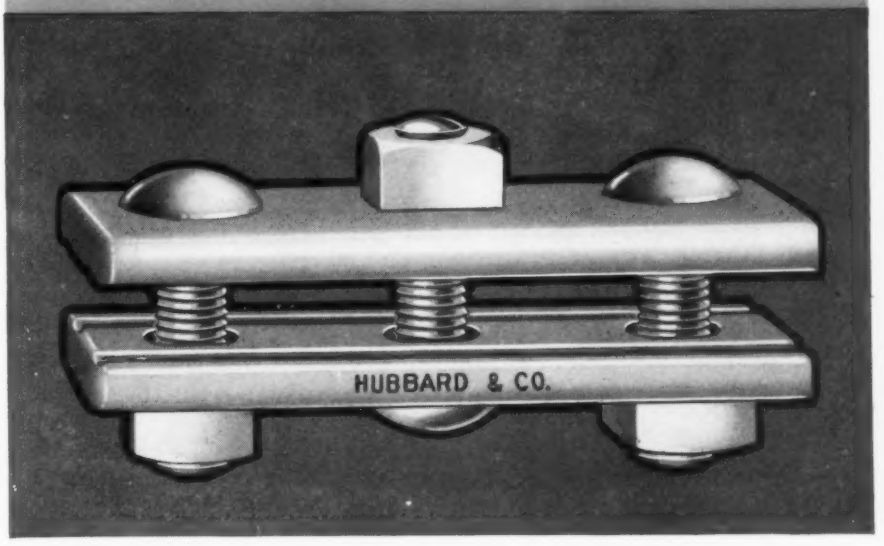
Monthly fire losses in the United States fell to a new low for the year in October, totalling an estimated $48,914,000, which represents a decline of 1.5 per cent below the loss total for September, according to the National Board of Fire Underwriters.

This was a reversal of the usual seasonal trend in fire losses, since the monthly totals usually rise during fall and winter months. October's fire loss also was a decrease of 5.7 per cent below the total for the same month last year.

Estimated losses for the first ten months of 1949 were $547,141,000, which is a decline of 7 per cent below the total for the same ten months of 1948.

Losses for the year ending Oct. 31, 1949, are estimated at $669,487,000. This is a decrease of 5.5 per cent from losses of $708,475,000 for the 12 months ending October 31, 1948.

HANG THE LOAD ON



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The tremendous holding power of Hubbard No. 7461 Guy Clamps may be attributed to the straight, parallel grooves which grip the strand securely along the entire clamping length. Specially alloyed steel bolts have large heads and oval necks which trap in the clamp body and prevent turning while tightening. Clamp Bolts will not strip nor elongate in normal use.

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End objectionable noise interference due to transient and induced voltages, and provide additional lightning protection in bell circuits, with the Vincent Rare Gas Relay. Compact, non-mechanical, the Vincent Rare Gas Relay is easily inserted in the bell box, or at the ground connection or protector block on compact handsets, in series with each bell. It needs no further maintenance.

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Leich Names Evers Assistant Chief Engineer

The Leich Electric Co., of Genoa, Ill., announces the recent appointment of H. G. Evers to the position of assistant chief engineer.

H. G. EVERS

From 1944 until he joined Leich, Mr. Evers was associated with the Federal Telephone & Radio Corp. Here, he set up a testing bureau and inspection standards. Later, Mr. Evers was transferred to a special development group when Federal entered the domestic switchboard market.

For 21 years prior to his work with Federal, Mr. Evers was with the Automatic Electric Co. in various phases of equipment engineering. For 10 years he did engineering inspection work on relay design, circuit testing and apparatus life tests. Then, for 11 years, Mr. Evers was engaged in circuit designing on a wide range of communication projects. Among these were: interconnection with foreign systems; relay switchboards; specialized switchboards for the Bell System; control equipment for the armed services, including early drone plane controls. Mr. Evers was head of the circuit adaptation group of Automatic Electric Co.

According to R. W. Siemund, president of Leich Electric Co., Mr. Evers' long and practical experience in the development and adaptations of automatic switching equipment makes him a valuable addition to the Leich engineering staff.

V V

Manuel Joins Paragon; To Cover Southwest

H. D. Manuel, who for the past six years has represented Kellogg Switchboard & Supply Co. in the southwest, is now covering that same territory for the telephone division of Paragon Electric Co., Two Rivers, Wis., manufacturers of bronze and Ironite drop wires.

H. D. MANUEL

Mr. Manuel has had a long association with the telephone industry, having been associated in the engineering and cable departments of various Independent and Bell companies since 1920. During the war he served in the Signal Corps as a communications officer in charge of telephone work.

Mr. Manuel will make his headquarters in Kansas City, Mo., and will cover the entire southwest.

Answers to Questions on Page 61

(1) CLR service was introduced in 1928.

(2) On a call handled by the toll center, both the tributary and toll center operator are responsible for the service rendered to the tributary subscriber. If the call is timed by the toll center operator, the accurate timing of the call is her responsibility.

(3) Initial Training is the first training a student operator receives. This training prepares the student to handle ordinary calls.

(4) "Nonpub (time)" should be entered on the ticket.

(5) Yes.

Marines at Camp Lejeune in North Carolina can send free personal wireless messages to any part of the United States, Pearl Harbor or Guam. Messages are handled through "ham" radio networks throughout the country.